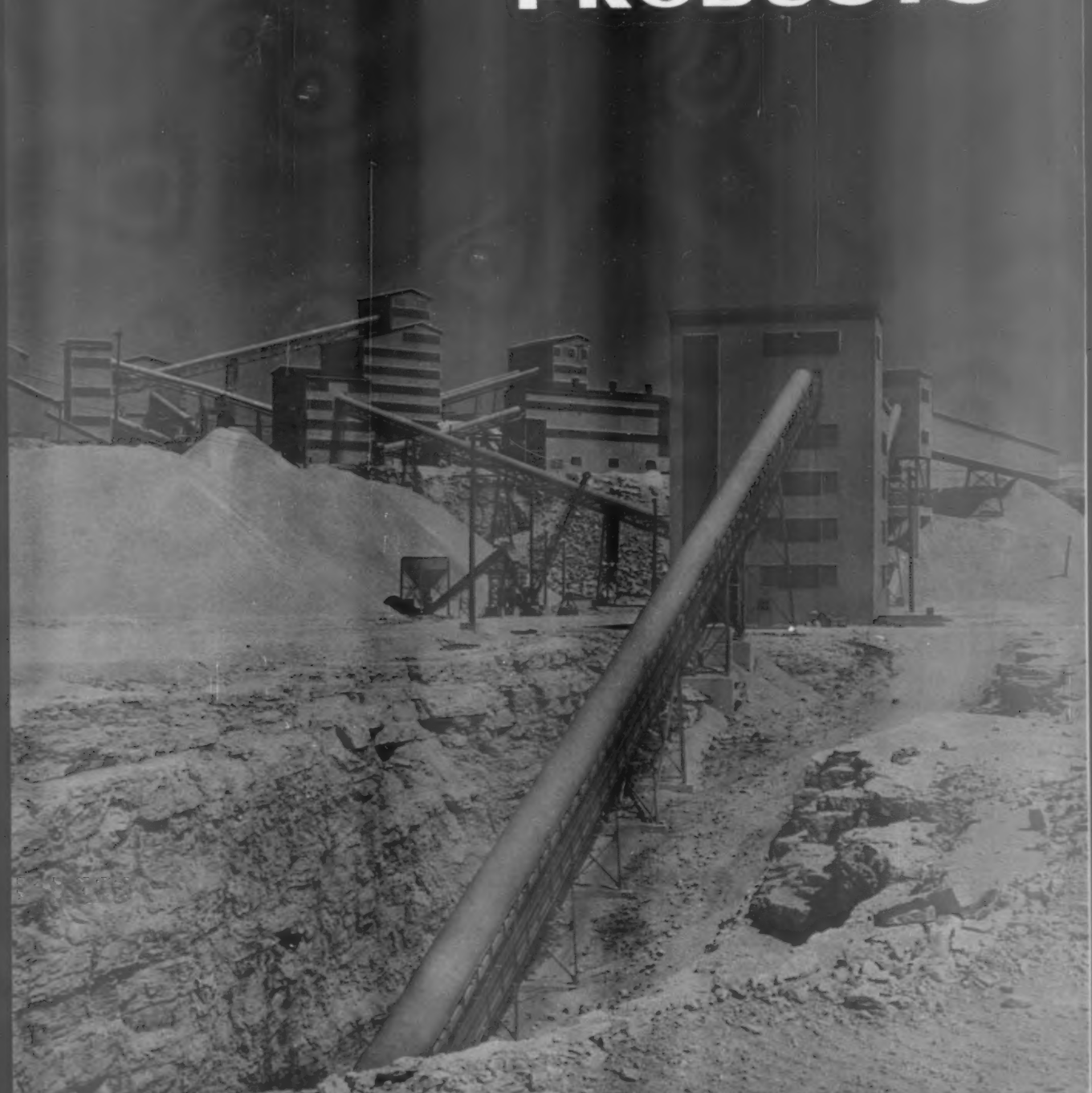
JUNE 1960

ROCK PRODUCTS



Vulcan scores with rebuilt plant

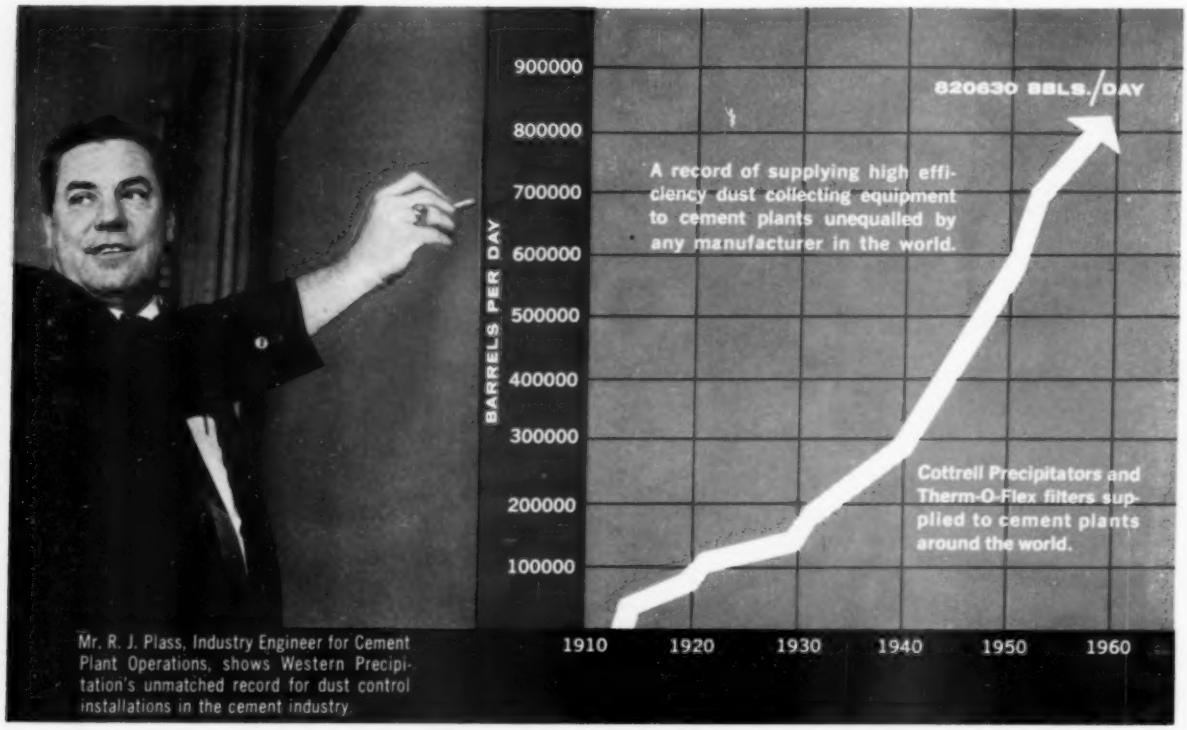
See Contents page 2

A WORLD-WIDE "EXPERIENCE RECORD"

UNEQUALLED IN THE ENTIRE CEMENT INDUSTRY!

Since its first cement plant installation almost a half-century ago, Western Precipitation has installed dust collection equipment on cement plants with a combined operating capacity of over 820,000 barrels per DAY... a record for wide-range experience, for customer satisfaction and overall "know-how" of kiln dust control that is unequalled in the entire industry!

Not only is this a testimonial to the reliability of Western Precipitation equipment (for the major percentage of these installations were repeat orders from satisfied customers) but it is also an indication of the way Western Precipitation equipment has kept pace with new processes and new advancements as they have been adopted by the cement industry.



Mr. R. J. Plass, Industry Engineer for Cement Plant Operations, shows Western Precipitation's unmatched record for dust control installations in the cement industry

Regardless of your type of operations, Western Precipitation engineers can provide an unbiased evaluation on the type of equipment best suited to your particular requirements—an evaluation backed by the industry's top organization in cement plant dust control!

"Cottrell" Electrostatic Precipitators—the equipment pioneered by Western Precipitation for high efficiency, long life electrostatic separation of dust particles from gas streams.

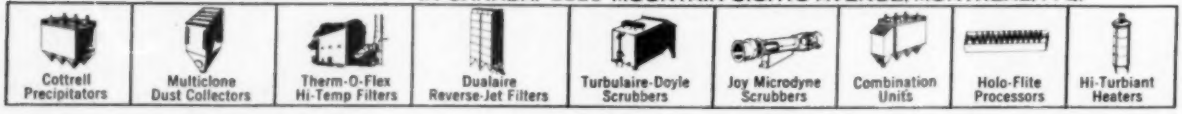
"Multiclone" Centrifugal Collectors—the multiple small-tube mechanical collectors pioneered by Western Precipitation for high-efficiency, low maintenance centrifugal separation of dust particles from gas streams.

"Therm-O-Flex" High Temperature Filters—the woven glass filter systems that handle gas inlet temperatures as high as 600°F. and feature new type silicone-treated filters that can be cleaned automatically without destructive shaking or high-frequency vibration.

▶Write for descriptive literature on Western Precipitation's equipment for kiln dust collection!

WESTERN
PRECIPITATION
DIVISION OF JOY MANUFACTURING COMPANY

1000 WEST 9TH STREET LOS ANGELES 54, CALIFORNIA
NEW YORK 17 • CHICAGO 2 • PITTSBURGH 2 • ATLANTA 5 • SAN FRANCISCO 4
IN CANADA: 8285 MOUNTAIN SIGHTS AVENUE, MONTREAL, P. Q.



Enter 1301 on Reader Card

General Contractor: Merritt-Chapman & Scott Corp.

Rubber sends mountains of rocks to help bottle up a river

MOUNTAINS of rocks, gravel and sand carried on those conveyor belts are made into concrete for a tremendous dam across the Colorado River. Engineers figure it will take *10 million* tons of this stuff to build a towering 700 foot wall stretching 1500 feet across the canyon. But contractors can't afford to have any delays caused by belts breaking down—thousands of men would be made idle.

B.F.Goodrich men, working with the contractors, suggested they use conveyor belts made with Nyfil fabric. These belts use nylon for cross threads in the fabric. They were developed by B.F.Goodrich to make the belts so strong they can stand the wear and tear that caused other belts to break down. And, most important, they cost no more than other belts.

These B.F.Goodrich Nyfil belts have been working on the Glen Canyon Dam project for two years now—16 hours a day, 5 days a week. There hasn't been a single breakdown and these belts are expected to give the same kind of service during the entire 5 or 6 years it will take to build the dam.

For complete information on the conveyor belt described here and all the other rubber products B.F.Goodrich makes for industry, call your B.F.Goodrich distributor or write *B.F.Goodrich Industrial Products Co., Dept. M-847, Akron 18, Ohio.*

B.F.Goodrich

CONVEYOR BELTS

Enter 1208 on Reader Card

ROCK PRODUCTS

a Maclean-Hunter publication, Vol. 63, No. 6

PHILIP D. ALLEN
President & General Manager
GEORGE C. LINDSAY, Editorial Director

Editorial

NATHAN C. ROCKWOOD
Editor Emeritus, 1917-1959
CHARLES R. KLUGE, Managing Editor
JOSEPH N. BELL, Special Features Editor
ELWOOD MESCHTER, Senior Staff Editor
JOHN H. BERGSTROM, Western Editor
WALTER B. LENHART, Consulting Editor
MILDRED K. SMITH, Associate Editor
MARGARET A. MARTIN, Assistant Editor
MEGAN R. THOMAS, Editorial Assistant
PATRICIA E. NOLAN, Editorial Assistant

Contributing Editors
VICTOR J. AZBE, OLIVER S. NORTH
PETER B. B. ANDREWS, EDGAR POE
DR. H. B. CHARMBURY
DR. ARTHUR GOULD, Editorial Consultant

Business

CECIL M. HANCOCK, Production Manager
ELAINE E. EGGE
Assistant Production Manager
M. JEAN KROM, Promotion Director
CARL G. FINETTE
Visual Presentation Director

Circulation
RICHARD C. LUKENS, Director
CLARENCE P. TEATS, Field Representative
LOUIS J. HADDAD, Field Representative

District Sales Offices

EASTERN AREA—Reginald W. Davis, *Associate General Manager*; Evans J. Kall, *District Manager*, 341 Madison Ave., New York 17, N.Y., Telephone: Oregon 9-8266

CLEVELAND AREA—Harold R. Dunlop, *District Manager*; Landon W. Myers, *Representative*, 316 Center Building, 20475 Farnsleigh Rd., Shaker Heights 22, Ohio, Telephone: Skyline 1-8886

WESTERN AREA—George K. Konz, *Associate General Manager*; Charles L. Lemperly, *District Manager*, 79 W. Monroe St., Chicago 3, Ill., Telephone: Randolph 6-2802

SOUTHWESTERN AREA—Richard E. Hoierman, *Representative*, 9006 Capri Dr., Dallas 18, Texas, Telephone: Diamond 8-1229

PACIFIC AREA—Duncan Scott & Co., *Representative*, 85 Post St., 5th Floor, San Francisco 4, Calif., Telephone: Garfield 1-7950; 1901 W. 8th St., Los Angeles 57, Calif., Telephone: Dunkirk 8-4151

FOREIGN—James H. Bedford, *Managing Director*, Maclean-Hunter Ltd., Trinidad House, 28/30 Old Burlington St. London, W. 1, England; Georg J. Linder, *Representative*, Wittelsbacher, Allee 60, Frankfurt Am. Main, Germany

June 1960

In this issue

84 Vulcan scores with rebuilt plant
by ELWOOD MESCHTER

92 *Operation Attitude* leads to safety mark
by KNEELAND A. GODFREY, JR.

95 How jigs solve a coal problem
by H. B. CHARMBURY

98 Dream deposit excites wide-awake planning
by RALPH S. TORGERSON

102 Cement production skyrockets in Soviet Russia
by BO NIKANDER

110 Mineral wool from volcanic ash?
by DR. MAYNARD P. BAULEKE

114 Lehigh's power centers set new trend
by JOHN F. HOWER & ANTHONY C. LORDI

126 On the level: this belt conveyor goes straight up
by ANDREW W. JENIKE

130 How to check motor controls
by HARRY E. HEAD

Departments

79 Calendar
16 Editorial
80 Hints & Helps
54 Industry News
30 Labor Relations
178 Manufacturers News
144 New Literature
166 New Machinery
152 New Patents
37 People in the News
20 Rocky's Notes
25 Washington Letter
13 What's Happening

ROCK PRODUCTS magazine is published monthly by Maclean-Hunter Publishing Corp., 79 W. Monroe St., Chicago 3, Ill.; P. D. Allen, President. Copyright, 1960, by Maclean-Hunter Publishing Corp. Second-class postage paid at Chicago, Ill. and at Long Prairie, Minn. *Subscription Information*—Subscription price: United States and possessions, Canada, one year, $3.00; two years, $4.00; three years, $5.00; U.S., single copy, 50¢. Pan-American, one year, $8.00; two years, $14.00; three years, $20.00; all other foreign, one year, $12.00; two years, $22.00; three years, $30.00; single copy, $1.00. Canadian subscriptions and remittance may be sent in Canadian funds to ROCK PRODUCTS, P.O. Box 100, Terminal "A," Toronto, Canada. *To subscribers*: Date on wrapper indicates issue with which your subscription expires. In writing to have address changed, give old as well as new address. ROCK PRODUCTS is indexed regularly by Engineering Index, Inc. and Industrial Arts Index.

Meets the most exacting specs ...

TELSMITH®
DESIGNED AND EQUIPPED

With its Washing Tower recently expanded, with additional Telsmith equipment (see 1, 3 and 5 below), Ontario Custom Crushing Limited, Brantford, Ontario, plant can produce aggregate *to meet even the most exacting specifications.* It had already proved its efficiency, and capacity, making all wanted sizes for construction. Equipment was furnished by Ontario Equipment & Supply, Ltd., Telsmith distributor, Toronto. Send for Bulletin 292.

Ontario Custom Crushing Limited plant at Brantford, Ontario.

(Below) WASHING TOWER — (1) 84"x12' Super-Scrubber. (2) Two 5'x12' Triple Deck Vibro-King Sizing Screens. (3) 10'x20' Dewatering and Classifying Tank. (4) 24"x19' Twin Screw Sand Classifier. (5) 30"x22' Twin Screw Sand Classifier.

G-32-1059

SMITH ENGINEERING WORKS

508 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

Representatives in Principal Cities in All Parts of the World • **Cable Address: Sengworks, Milwaukee**

Enter 1231 on Reader Card

Washed sand and gravel . . . 250 tons per hour profitably produced by

Diamond Stationary Plant

Twin loading hoppers for direct or blend feeding of pit run materials

- Twin trapleading hoppers, each with 24" x 3'6" plate feeders
- 3 Lattice-framed plant belt conveyors (30" x 140', 24" x 94', 18" x 50')
- 2 4' x 12', 3-deck screens, spray-bar equipped
- 1 28" water scalping classifying tank with triple collecting flume
- 2 Screw washers 36" x 25'
- 1 Screw washer 20" x 22'
- 2 Wash boxes
- 1 3' cone crusher
- 1 10" x 24" jaw crusher
- 6 Stockpiling conveyors (from 18" x 55' to 20" x 80')

Enter 1245 on Reader Card

Diamond Iron Works engineers have helped a new sand and gravel operator design a plant to profitably produce 250 tons of crushed and washed aggregate per hour.

The firm is Parmar Sand, Inc. of Transfer, Pa.

Their Diamond closed circuit plant takes a wide variation of sand and gravel, obtained from two different pits, and turns it into seven basic grades, including both concrete and mason sand.

Parmar's market is broadened further because the close control possible with their Diamond plant assures materials which meet specifications for both highway and commercial construction in two states.

Another advantage of the plant, in addition to being compact and electrically driven, with all wiring underground, is that it requires very little supervision. And it is designed so that future expansion will require minimum alteration to existing facilities.

In summary, this is another example of how Diamond provided a profit package of high capacity, smooth operation, and low cost. We'd welcome the chance to help you—regardless of the size plant you want. See your Diamond Distributor.

DIAMOND IRON WORKS
DIVISION
GOODMAN MANUFACTURING COMPANY
Halsted Street and 48th Place • Chicago 9, Illinois

DIAMOND

For 33 YEARS —Always Ready to go!

WHEN does a Northwest wear out? We ourselves sometimes wonder! Here is a 33-year old veteran working for the Rion Crushed Stone Corporation at Rion, South Carolina. Take a good look at what it's handling—good hard, tough rock! Beaten up by the years, perhaps working on borrowed time, it is still always ready to go—and it's not through yet. This old rig is one of some fifteen Northwests that Rion has owned. The other picture shows their new 80-D in the pit.

Ability to serve, ability to stay on the job, ability to get the job done is behind repeat order purchases by people like Rion.

We built 'em tough in those days but they are tougher today. Northwests load fast and move fast! Plenty of power combines with the Northwest Dual Independent Crowd that utilizes force most independent crowd shovels waste to cut through a bank or handle heavy digging without "stuttering". Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and make spotting accurate without losing time jockeying a load over the truck. The Cushion Clutch eliminates shock overloads before they reach machinery and the Feather-Touch Clutch Control gives the "feel" of the load and makes operation easy.

This is only part of the story. We would like to have you know the complete details on the size machine you need. Why not ask for a catalog?

NORTHWEST ENGINEERING COMPANY

S-80-105-S

135 South LaSalle Street, Chicago 3, Illinois

1514 Field Building

NORTHWEST *Always Ready to* **GO**

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	13-Ton to 60-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton to 35-Ton Capacity

STEPHENS-ADAMSON PULLEYS

CURVE CROWN® BY STEPHENS-ADAMSON

FEATURING "SQUEEZELOCK" HUB DESIGN

FOR GREATER BELT TRAINING EFFECT... REDUCED BELT WEAR

STURDY RIM CONSTRUCTION

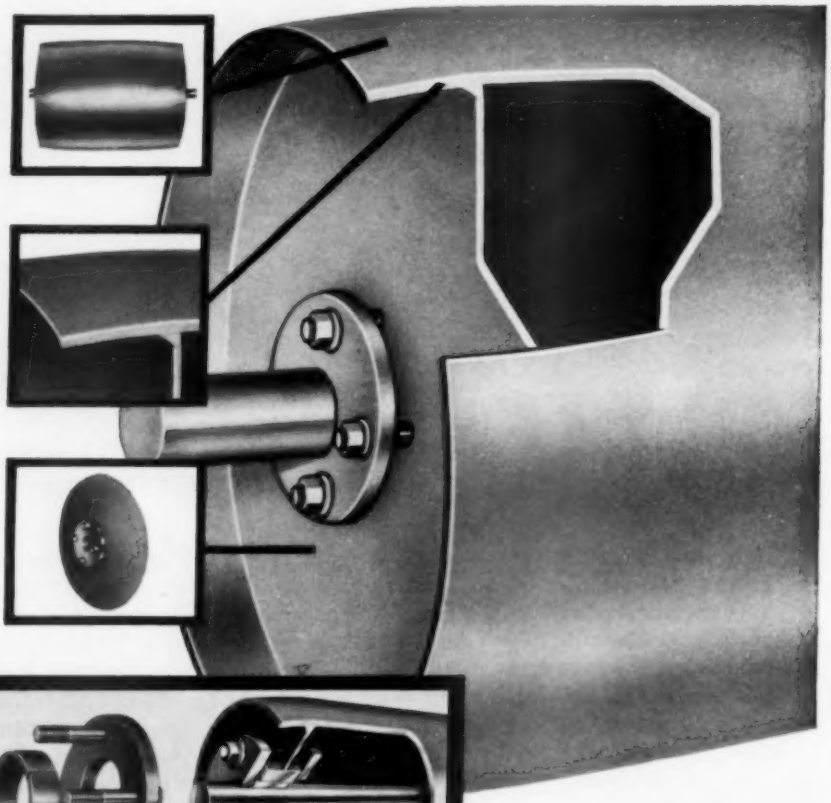
Pulley rims are made of one-piece construction, formed absolutely round under hydrostatic pressure. The only seam is machine-welded both inside and out to insure 100% penetration of welds.

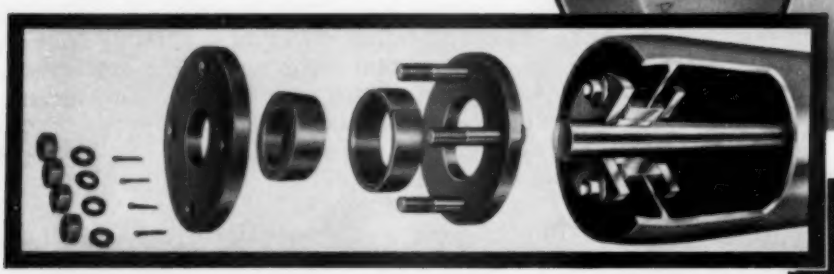
CURVE CROWN® DESIGN

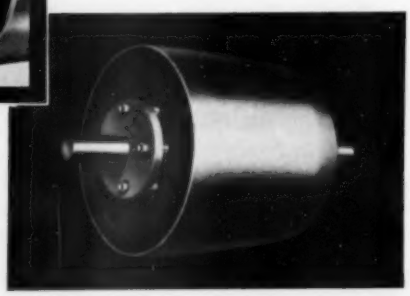
Curve Crown on outer ends of rim accurately formed. Revolutionary design eliminates conventional center peak — high point for belt stretch and wear —while increasing belt training effect more than 100%.

ACCURATE END PLATE ASSEMBLY

End plates are machined on both the O.D. and I.D. to insure concentricity between the bore and the outer rim. They are pressed into position for tight fit-up and submerged arc-welded for maximum efficiency.







"SQUEEZELOCK"® HUB Revolutionary design of "SQUEEZELOCK" Hub provides gripping power for full torque transmission without the use of keyways and eliminates distorting loads against pulley end plates. Two split tapered bushings are wedged against shaft and pulley end plates by two independent hub plates which are squeezed together by tightening four large diameter bolts.

Write for Bulletin 558

S-A

ENGINEERED BULK HANDLING SYSTEMS
MATERIALS HANDLING PRODUCTS
SPEEDWALK PASSENGER CONVEYORS
FAIRMASTER BALL BEARING UNITS
SPHERCO BEARINGS & ROD ENDS

STANDARD PRODUCTS DIVISION

STEPHENS-ADAMSON MFG. CO.

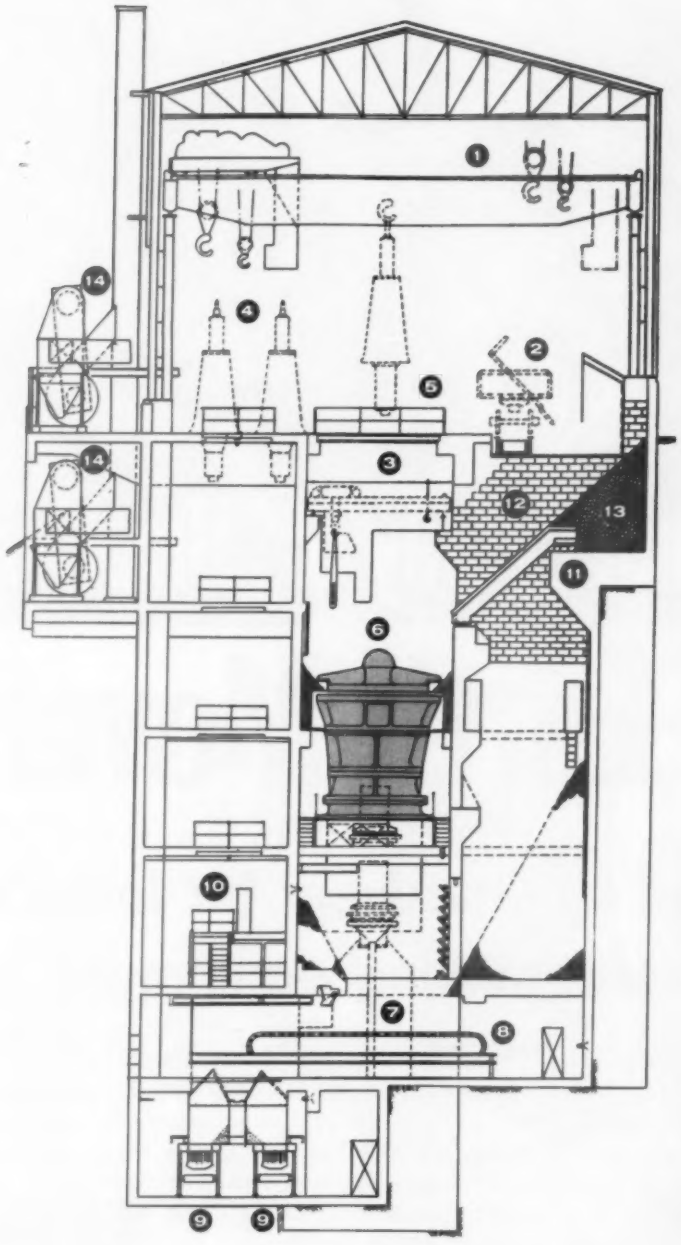
GENERAL OFFICE & MAIN PLANT, 7 RIDGEWAY AVENUE, AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

Enter 1207 on Reader Card

1,000,000

POUNDS OF TRAYLOR ENGINEERING!



TRAYLOR

world's largest manufacturer of 60" gyratory crushers designed and built this giant for installation in Peru.

The Southern Peru Copper Corporation called on Traylor-made ECONOMY, EFFICIENCY, AND CAPACITY to handle the tremendous crushing workload at its new plant in Toquepala, Peru.

Drawing shows Traylor 60" gyratory crusher operation:

1. 100-ton crane with 25-ton auxiliary hook and operator's cab
2. 43-cu. yd. side-dump mine car
3. 20-ton crane with rock hook
4. Mantle storage
5. 18 x 22-ft. removable hatch
6. 60-in. Traylor gyratory primary crusher
7. Hydraulic hoist, 14-ft. lift, 25-ton capacity
8. Two 72-in. pan feeders
9. Two 54-in. chain-belt conveyors
10. Electrical control panel
11. 8-in. grizzly
12. 2-in. plate liners
13. Dead-bed areas
14. Air filter dust removal unit

Other Traylor Crushers made for primary, secondary or fine reductions. Write today outlining your crushing requirements and let Traylor's engineers make recommendations . . . or ask for Bulletin No. 1126.

TRAYLOR ENGINEERING & MANUFACTURING
DIVISION OF FULLER COMPANY
1574 MILL ST., ALLENTOWN, PA.
Sales Offices: New York, Chicago, San Francisco
Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P. Q.

TCA-9

Enter 1244 on Reader Card

Now 40% Stronger–only 6% Heavier

The New Earth-Mover

Especially designed by Goodyear for today's high-powered earth-moving equipment

As you know, today's earth-movers move bigger loads faster than ever before.

To meet the added burden imposed on rims, Goodyear has developed a complete new line of Earth-Mover Rims that are now 40% stronger – yet add an average of only 6% to rim weight.

With Goodyear Earth-Mover Rims you enjoy such additional benefits as a heavy-duty bead seat band driver – to prevent slipping under severest operating conditions. And you get the positive air seal provided by Goodyear's famous Tru-Seal principle.

Goodyear makes rims in widths up to 37" and diameters up to 49". To prevent premature tire and rim failure, it pays to buy and specify rims job-fitted by Goodyear. See your local rim distributor, or write: Goodyear, Metal Products Division, Akron 16, Ohio.

Send for Free Goodyear Rim Catalog

–84 pages of facts and pictures on Goodyear's complete line of rims for every type of vehicle.

Tru-Seal–T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

Rim

Only Goodyear Rims
have *Bond-A-Coat Finish*,
for lasting protection
against rust and corrosion.

Buy and Specify RIMS by

GOODYEAR

MORE TONS ARE CARRIED ON GOODYEAR RIMS THAN ON ANY OTHER KIND

Enter 1206 on Reader Card

Who else...

...but HOUGH provides these facts?

This factual data on PAYLOADER four-wheel-drive, rubber-tired tractor-shovels in each of 1, 2, 3, and 4 yard sizes points up the advantages of their design, performance and safety features. Comparisons include all competitive units from manufacturers' printed specs as of April 1, 1960.

1 cu. yd. H-30 PAYLOADER®

More Power: H-30 has 17% more horsepower than next most powerful machine in this category.

More Dumping Clearance and Reach: The H-30 has 4" more clearance and over a foot more reach.

Safety Boom Arms: All moving members pivoted in **front** of operator. **Exclusive** on the H-30.

Safety Ladder: Makes access to the operator's compartment easy and safe. Another **exclusive**.

"Full" Power-Shift Transmission: No manual shift, working to travel range. "PAYLOMATIC" transmission Hough designed and manufactured.

Four-Wheel-Brakes: Exclusive on the H-30 they permit equal stopping in both forward and reverse. Also sealed against dust and dirt.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. H-30 **exclusive.**

Closed Hydraulic System: Sealed and pressure-controlled hydraulic reservoir with renewable cartridge-type filter and fine-mesh screen. Another **exclusive** H-30 protective feature.

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. Another **exclusive.**

Easy Accessibility: No other comparable unit has H-30 accessibility. Dip stick, filler cap, batteries, connections and service points reached from ground level.

2 cu. yd. H-70B PAYLOADER®

More Power: H-70 has more horsepower than the average of 9 competitive gas and diesel units.

More Dumping Clearance: The H-70 has 4" more clearance than average of 9 competitive units.

Safety Boom Arms: Underslung design keeps the operator safe from all moving members.

Safety Ladder: Makes access to the operator's compartment easy and safe. An H-70 **exclusive.**

"Full" Power-Shift Transmission: No manual shift from work to travel ranges. "PAYLOMATIC" transmission Hough designed and manufactured.

Four-Wheel-Brakes: Hydraulic, power-boosted four-wheel-brakes with separate parking brake. Front brakes sealed against dust and dirt.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. A Hough "first".

Closed Hydraulic System: Sealed and pressure-controlled hydraulic reservoir with renewable cartridge-type oil filter and fine-mesh screen.

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. An H-70 **exclusive.**

Torque-Proportioning Differentials: Transfer up to 24% more power to best traction wheels.

Easy Accessibility: Extra attention has been given to providing utmost accessibility to all service points.

Enter 1204 on Reader Card

3 cu. yd. H-90B PAYLOADER®

4¼ cu. yd. H-120 PAYLOADER®

More Power: H-90 has 24 more horsepower than the average of 8 competitive diesel models.

More Dumping Clearance: The H-90 has 10" more clearance than average of 8 competitive units.

Safety Boom Arms: Underslung design keeps the operator safe from all moving members.

Safety Ladder: Makes access to the operator's compartment easy and safe. An H-90 **exclusive.**

"Full" Power-Shift Transmission: No manual shift from work to travel ranges. Improved units have better operating characteristics.

Four-Wheel-Brakes: Power air brakes with big braking area on all four wheels assures easy, safe handling of the H-90 at all times.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. H-90 **exclusive.**

Closed Hydraulic System: Sealed and pressure-controlled hydraulic reservoir with renewable cartridge-type oil filter and fine-mesh screen. Another H-90 **exclusive** protective feature.

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. An H-90 **exclusive.**

Torque-Proportioning Differentials: Transfers up to 24% more power to best traction wheels.

Easy Accessibility: Extra attention has been given to providing utmost accessibility to all points requiring checking and service.

Power-Steering: All "PAYLOADER" four-wheel-drive units have hydraulic power-steering.

More Power: H-120 has 38 more horsepower than next most powerful machine in this category.

More Dumping Clearance and Reach: H-120 has 4" more clearance, 6" more reach than next unit.

Safety Boom Arms: All moving members pivoted in **front** of operator. **Exclusive** on H-120.

Safety Ladder: Makes access to the operator's compartment easy and safe. Another **exclusive.**

"Full" Power-Shift Transmission: Hough-built, full-reversing, constant-mesh, countershaft-type with balanced rotating hydraulic clutches.

Four-Wheel-Brakes: Power air brakes with large braking area assure easy, safe handling at all times.

"Operator's Choice" Brake Pedals: Dual pedals give the operator a choice of braking with or without transmission engaged. H-120 **exclusive.**

Separate Oil-Cooling Radiator: A fan-cooled "oil-to-air" heat exchanger cools transmission and torque-converter oil. Another **exclusive.**

Better Balance: Exclusive use of lightweight, extra-strong "T-1" steel for box-section boom arms saves over a ton of "dead-weight" on the load-carrying end.

Better Stability: Counterweighted by approved use of dry ballast material in rear tires. Lower center of gravity, 50% of weight below rear axle. **Exclusive.**

Protection: Special dry-type air cleaner gives 99.8% dust removal efficiency under most adverse conditions. Sealed, pressure-controlled hydraulic system has cartridge oil filters and fine-mesh screens. **Exclusive.**

Extras: Canopy-type cab with windshield wipers and special lights is standard equipment.

HOUGH, PAYLOADER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

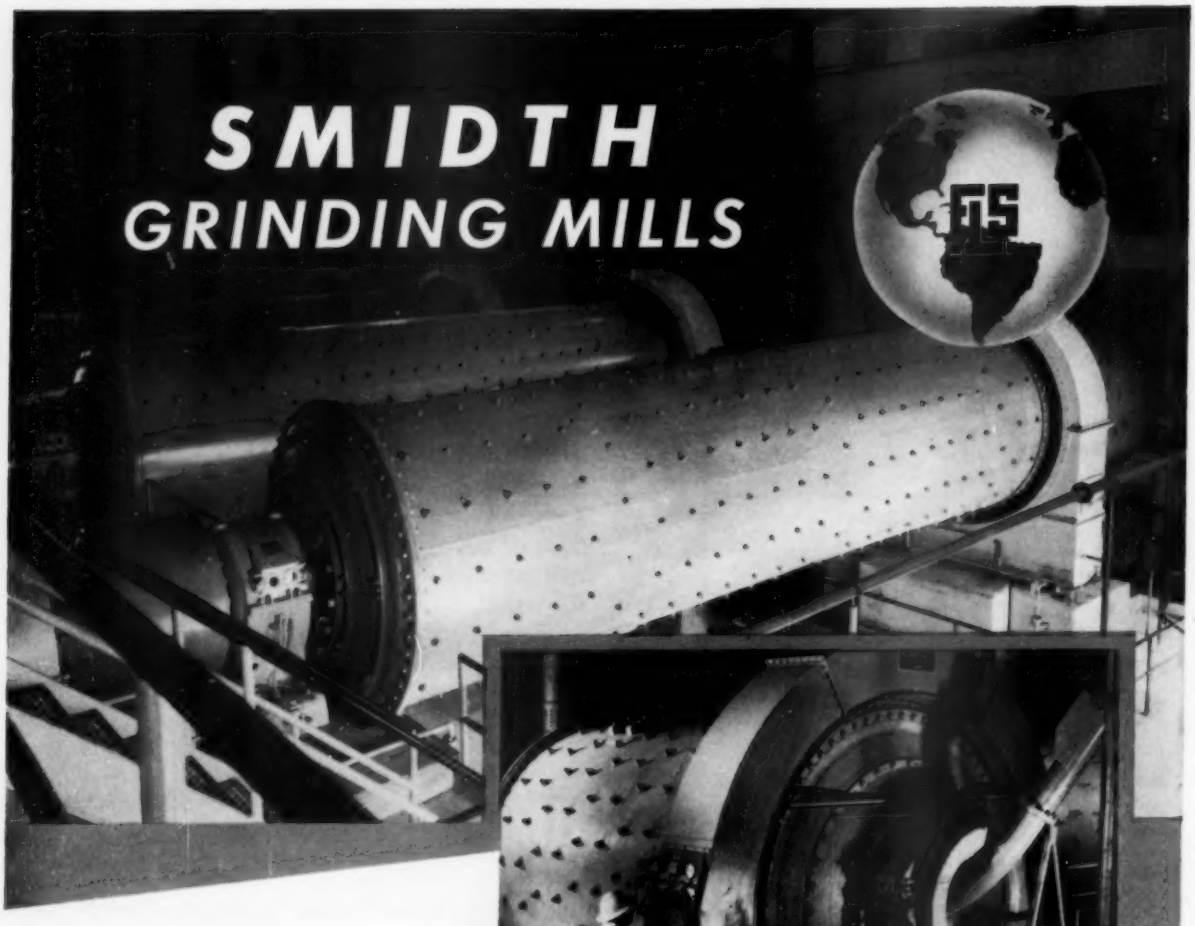
HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO. 5-B-1
705 Sunnyside Ave., Libertyville, Ill.
Send data on all "PAYLOADER" models and attachments.
Name
Title
Company
Street
City State

Enter 1205 on Reader Card

SMIDTH
GRINDING MILLS



Ball Mills and multi-compartment Unidan Mills for wet and dry, open and closed circuit grinding and airswept Tirax Mills for simultaneous drying and grinding.

Special features include the Smidth slide shoe bearing and the Symetro Drive.

Upper photo: Unidan Mills, Symetro driven, with one slide shoe and one trunnion bearing. *Lower photo:* Gear driven Ball Mill.

F. L. Smidth & Co.
Incorporated
ROCKEFELLER CENTER
1270 Avenue of The Americas
New York 20, N. Y.

F. L. Smidth & Co., A/S
77 Vigerslev Alle
Copenhagen, Denmark

F. L. Smidth & Co., Ltd.,
105, Piccadilly,
London, W. 1, England

F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.
1270 Avenue of The Americas
New York 20, N. Y.

F. L. Smidth & Co. (Bombay) Private Ltd.
42 Queen's Road
Bombay, India

Enter 1232 on Reader Card

WHAT'S HAPPENING

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

Construction began its usual seasonal rise in March, reaching a valuation of $3.7 billion. This was five percent above February—a good deal under the eight-percent increase generally expected at this time. Failure of figures to show normal seasonal gains placed the seasonally adjusted annual rate of total construction expenditures at $52.9 billion in March, down from $54.5 billion the month before. Construction spending for the first three months of 1960 totaled $10.9 billion, two percent below the like period last year.

The props are being knocked from under a German city on the Rhine, but all is according to plan. Duisburg, according to Newsweek, "is trying to raise its prospects by going down in the world." The project will take until 1970. Erosion of the river bed has lowered the water level; consequently, many barges are not high enough in the water to unload their cargoes. The city fathers decided to remove a 3 to 6-ft. coal seam under the town and pump in earth to cushion the pressure of the rock above, thus allowing Duisburg to sink smoothly and evenly. A sum of $5 million has been budgeted for damages, if any, to buildings, but there will be plenty of money in the coffers resulting from the sale of 12 million tons of high-grade coal.

Rubberized tape may not have been visualized as a structural material even by its maker, Minnesota Mining & Manufacturing Co., but it will be pressed into service to help hold temporary walls in place at the Democratic national convention. The contractor responsible for building 120 temporary rooms in the Los Angeles Sports Arena has been instructed to drill no holes in the concrete floor. Instead, he'll anchor the walls to the floor with 3-M tape and to the ceiling with brackets. He hopes they will hold. A surging crowd of 20,000 persons prone to convention tactics of stampedes and landslides may give him a good chance to prove he is right.

Stockpiling of gravel in Alberta while the ground was frozen was like making hay while the sun shines. Over the winter, 16 stockpiles were built up at locations along the main highways in the province. This was in anticipation of this season's construction projects. Advantages were these: off-season work was provided for truckers and gravel was taken from areas made inaccessible in summer by muskegs and high river levels.

Highway men are determining soil density and moisture with radioactive rays. The Wisconsin State Highway Department has two new machines, comprised of portable metal boxes, that are now being used for field testing on road jobs. The density test, taking about 30 min., determines compaction by measuring how deeply the radioactive rays penetrate; in a similar procedure lab men measure the soil's moisture. Digging and weighing of samples is now unnecessary.

Bentonite slurry stabilization cut construction costs by millions of dollars at the Wanapum Dam project on the Columbia River. When placed in trenches under excavation, the slurry supported the sides without need for sheet-piling, shoring or other strengthening; it also prevented entrance of groundwater. This is the first dam-construction use of the method in the U. S., although it was so used in Europe as long ago as 1950, reports Engineering News-Record. Powdered bentonite was shipped to the site in 100-lb. sacks and mixed 1:12 with water in three portable plants, each with 15-bbl.-per-min. capacity. Jet-type mixers developed by Cronese, Inc., Glendale, Calif., were used.

Red cars with tires to match may be seen in Southeastern states this spring, as Coca Cola Co. fountain service cars make their rounds. These colored tires that the beverage company is testing have resulted from Columbia Southern Chemical Corp.'s research with its chemically produced silica, Hi-Sil 233. When this material replaces carbon black as the reinforcing agent in rubber, various pigments may be used in the compound. A plant to manufacture the colored tires has been erected at Portland, Ind., by Gehrig Rubber Mfg. Corp.

Glass makers expect new products to help boost output to 23 billion bottles and jars this year, reports The Wall Street Journal. This would be a six-percent increase over 1959. Competing with paper cartons, metal cans and plastic containers, glass container makers are working on no-return milk bottles similar to the one-way beer bottles some breweries use. Colored glass will get a bigger play, and jars and bottles will be made lighter but tougher, partly by use of chemical coatings on the glass.

Ice reinforced with fibrous glass is an MIT answer to arctic construction problems. Scientists at the Air-Force-sponsored ice lab at Massachusetts Institute of Technology have been working on an ice "alloy"—ice reinforced with fibrous glass—that may be used in storage buildings or aircraft runways. Mixing ice with only four percent of fibrous glass makes it 10 times stronger. Modern aircraft require natural ice thicknesses of from 50 to 74 in. for safe landings; a 6-in. layer of the new alloy may adequately support large planes. Structural members for buildings could be cast in wooden forms just like concrete. Target date for practical use of such runways and structures? In two or three years.

Boric acid and old newspapers make an unusually effective insulating material. In a demonstration, it shielded a man's hand from a 4,000-deg. F. flame. The product, Thermo-K, was developed by United States Insulation, Carson City, Nev. Its thermal conductivity is .19, much lower than many other insulation materials. Also, it is lightweight and water resistant.

Weathering of rock is an age-old problem to which answers are being found. Carbon dioxide is the villain identified by Utah's State Engineering Experiment Station. Erosion of sandstone buildings, they point out, is noticeable in industrial areas of Utah; similar buildings in areas of no industry have retained their original beauty.

Fewer replacements, farther between

...with these LINK-BELT conveyor and elevator chains

LINK-BELT C CLASS CHAIN combines cast malleable center links with steel sidebars connected by steel pins. Broad tops and bottoms provide ample sliding surfaces for drag conveyors. Also available with Promal or "file-hard" Promal center links for extreme loads and abrasive wear. Promal is the special Link-Belt metal that lasts much longer . . . costs but little more.

LINK-BELT SS CLASS BUSHED CHAIN. If your conveyor or elevator must be lengthened, or load increase accommodated, you can install this all steel chain in place of C Class *without changing sprockets!* It offers hardened joint bearing surfaces for greater wear resistance in heavy-duty conveying and elevating. Smooth, tough joint surfaces repel gritty materials, prevent packing, and resist abrasion.

Full information on these chains . . . plus a broad line of attachments and sprockets—is contained in Catalog 1050. Get your copy by writing direct . . . or call your nearest Link-Belt office or authorized stock-carrying distributor, listed under CHAINS in the yellow pages of your Phone Directory.

LINK-BELT

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses, District Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 15.065

Enter 1304 on Reader Card

EDITORIAL

by GEORGE C. LINDSAY

Here's a place for cooperation

MIS-DELIVERY OF EQUIPMENT AND REPAIR PARTS is a problem that has given some producers short tempers and gray hair. Although it may not be a wide-spread problem in the industry, it's important enough to some that they've complained to us about it. "Jack up the manufacturers with an article telling them how much they're muffing the job," they say.

To be fair, we've also had complaints on the problem from across the fence. Manufacturers say that some producers don't order properly. "Sometimes we have to guess at the part our client needs, or find out from our representative in the field, since the part number either is not given or is incorrect," they wail.

So, it is a problem—but one, it seems to us, that can be solved with a little cooperation, patience and time.

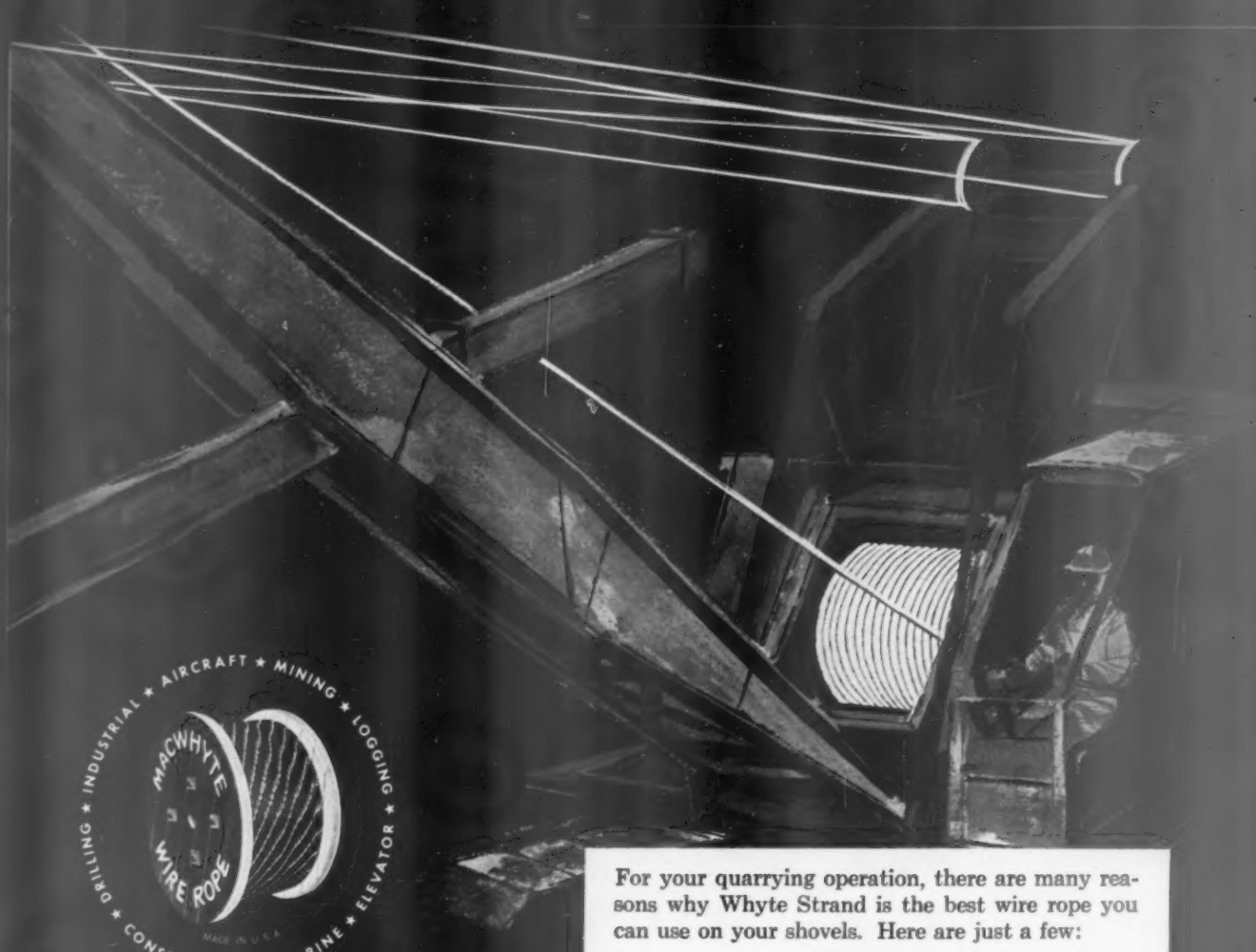
One stone producer wrote us that it's a real problem for him—"the hardest part of operating this business," he thinks. He recounted his experience of ordering a $1,250 piece of equipment. He got it alright, but he says it cost him $1,000 more in lost time and rebuilding before he could "feel reasonably sure" it would do the job he bought it for. Of course, that's ridiculous. One wonders how that manufacturer is still in business, if he is.

In defense of the producers, we know that they have to exact more accuracy in ordering, since the number of parts and equipment pieces they need and order is growing every year. Yet, some need to pay more attention to this business of ordering properly. Remember that the manufacturers' parts problem is maybe a million times that of a medium-sized rock products producer.

We're sure you know that manufacturers don't like mis-deliveries anymore than you do. And they're working to improve their service. As an example, the Parts Council of the Construction Industry Manufacturers Association is working on the problem constantly. We have before us a study, conducted by that Council, on "Industry Parts Practice." This resulted from a questionnaire to the entire group to learn what policies and practices existed.

There are examples of extreme cases of bad handling of orders on both sides. They can be eliminated if each understands the other's problems better, and makes an effort to improve the situation in his own shop.

Enter 1213 on Reader Card



DRILLING ★ INDUSTRIAL ★ AIRCRAFT ★ MINING ★ LOGGING ★ CONSTRUCTION ★ MARINE ★ ELEVATOR ★

MACWHYTE WIRE ROPE

MADE IN U.S.A.

THERE'S A REASON WHY IN WHYTE STRAND SHOVEL ROPES!

For your quarrying operation, there are many reasons why Whyte Strand is the best wire rope you can use on your shovels. Here are just a few:

- Every foot of wire in Whyte Strand is specially drawn by Macwhyte in their own wire mill.
- Product engineers determine the exact makeup of each rope to assure correct size, strength, and flexibility to meet your requirements.
- Special Macwhyte lubricants are used in accordance with the needs of the equipment or the type of service in which the rope will be used.
- Entire wire and rope mill operations are concentrated on the making of one product . . . *wire rope!*

But the proof of the pudding is in the using — and here's where Whyte Strand shines. You can spend all kinds of money, but you can't buy a better rope for your shovels than Whyte Strand . . . nor one that will give better service, with less trouble.

Whyte Strand shovel ropes are made in two strengths — Monarch Whyte Strand Improved Plow Steel and PREmium Whyte Strand Extra Improved Plow Steel — both are listed in bulletin No. 6025.

Ask for this new bulletin which gives complete listings of all Whyte Strand wire rope. 213-6

MACWHYTE Wire Rope COMPANY

2900 Fourteenth Avenue, Kenosha, Wisconsin, U. S. A. | Wire Rope • Slings • Cable Assemblies

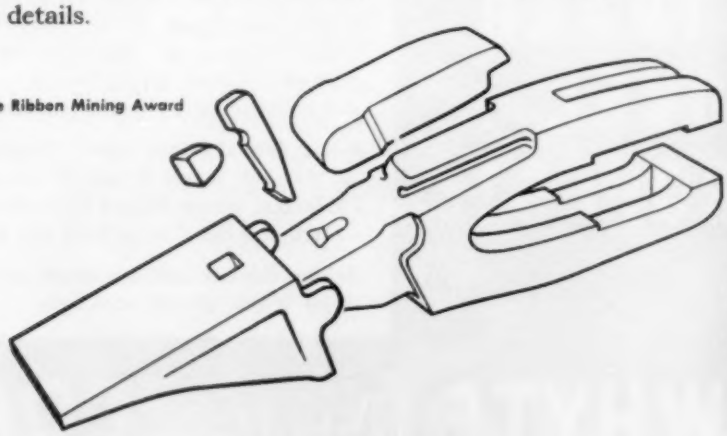
ESCO

TESTED POINTS AND WEAR CAP ADAPTERS

You can dig more yards per shift, at lower costs per yard, with *ESCO* Cast 12M Tested Points and Wear Cap Adapters. *ESCO* Points and Wear Cap Adapters are the product of more than 40 years metallurgical experience and tooth engineering, and are the most rugged combination ever developed for Taconite.

ESCO Tested Points and Wear Cap Adapters stay on the job pass after pass, day after day on tough rock work that literally "eats" ordinary teeth. Call your nearest *ESCO* dealer today for complete details.

Blue Ribbon Mining Award



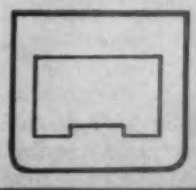
CUT COSTS SHARPLY IN TACONITE AND ORE HANDLING

ESCO TESTED POINTS AND WEAR CAP ADAPTERS INCREASE YARDAGE, LAST FAR LONGER BECAUSE:

- Replaceable Wear Cap, winner of a MINING WORLD Blue Ribbon Equipment Award, prolongs adapter life.
- Points, Adapters and Wear Caps are *cast* in wear resisting, shock absorbing *ESCO* 12M Steel.
- Self-sharpening Points start sharp, stay sharp.
- Points are heat treated and individually Brinell tested to assure maximum hardness.
- Quick-change design permits changing 4 points in 5 minutes.
- Eight different point shapes to choose from to match your digging requirements.

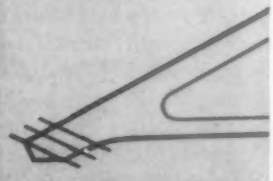
Individually Brinell tested. Look for this mark.

***ESCO* Points are cast, with box section design, and are all solid metal across the face. There are no welds to invite breakage and wear.**



Ample size of Wear Cap prolongs adapter life.

***ESCO* Points feature self-sharpening design.**



ESCO®

BRINELL HARDNESS Hardness where it counts, shock-absorbing toughness where it's needed most. That's why *ESCO* Points and Adapters "soak up" the shock and impact in slicing through the toughest digging, protecting the bucket lip.

ELECTRIC STEEL FOUNDRY COMPANY

2181 N. W. 25TH AVENUE • PORTLAND 10, OREGON
MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Cities
ESCO INTERNATIONAL, NEW YORK, N. Y.
IN CANADA ESCO LIMITED

Enter 1203 on Reader Card

ROCKY'S NOTES

by NATHAN C. ROCKWOOD

Soil, Grass and Cancer

ABOVE IS THE TITLE to an exceedingly interesting little book* that has recently come to hand. According to space devoted to it in newspapers, cancer must be an interesting subject to many people; and this book should make the subject of even more interest to producers of mineral fertilizers such as lime, limestone, gypsum, phosphate rock, etc., as well as all quarry operators who read ROCK PRODUCTS. The author is a thorough student of literature bearing on his chosen subject, and is described in the Foreword by a noted British M.D. and D.Sc. "as essentially a farmer with his outlook based on the traditional wisdom of the peasantry of his native France." The author himself states in his conclusion: "This is the scientific philosophy that I have developed for myself through watching my cows at grass."

The actual theme is the influence of the soil on the metabolism of living cells. A living cell is a minute particle of tissue or protoplasm of any living thing, plant or animal. Protoplasm is described as a jelly-like substance in which tiny grains of solid matter are suspended. Metabolism is defined as the act or process by which dead food is built into living matter and, on the other hand, living matter is broken down into simpler products within a cell or organism.

It is readily understandable that metabolism in man is a very complicated and involved process, which probably has evolved through perhaps many million years. Very little is known directly of how it operates. About all that is positively known is that various phases of metabolism are performed by specialized organs in the body, and that the operations of these organs, or organisms, are dependent upon what are known as enzymes. An enzyme is any one of the various complex organic substances, such as pepsin, originating from living cells and capable of producing by catalytic action certain chemical changes such as digestion of food (in the case of pepsin). Several hundred enzymes have been identified.

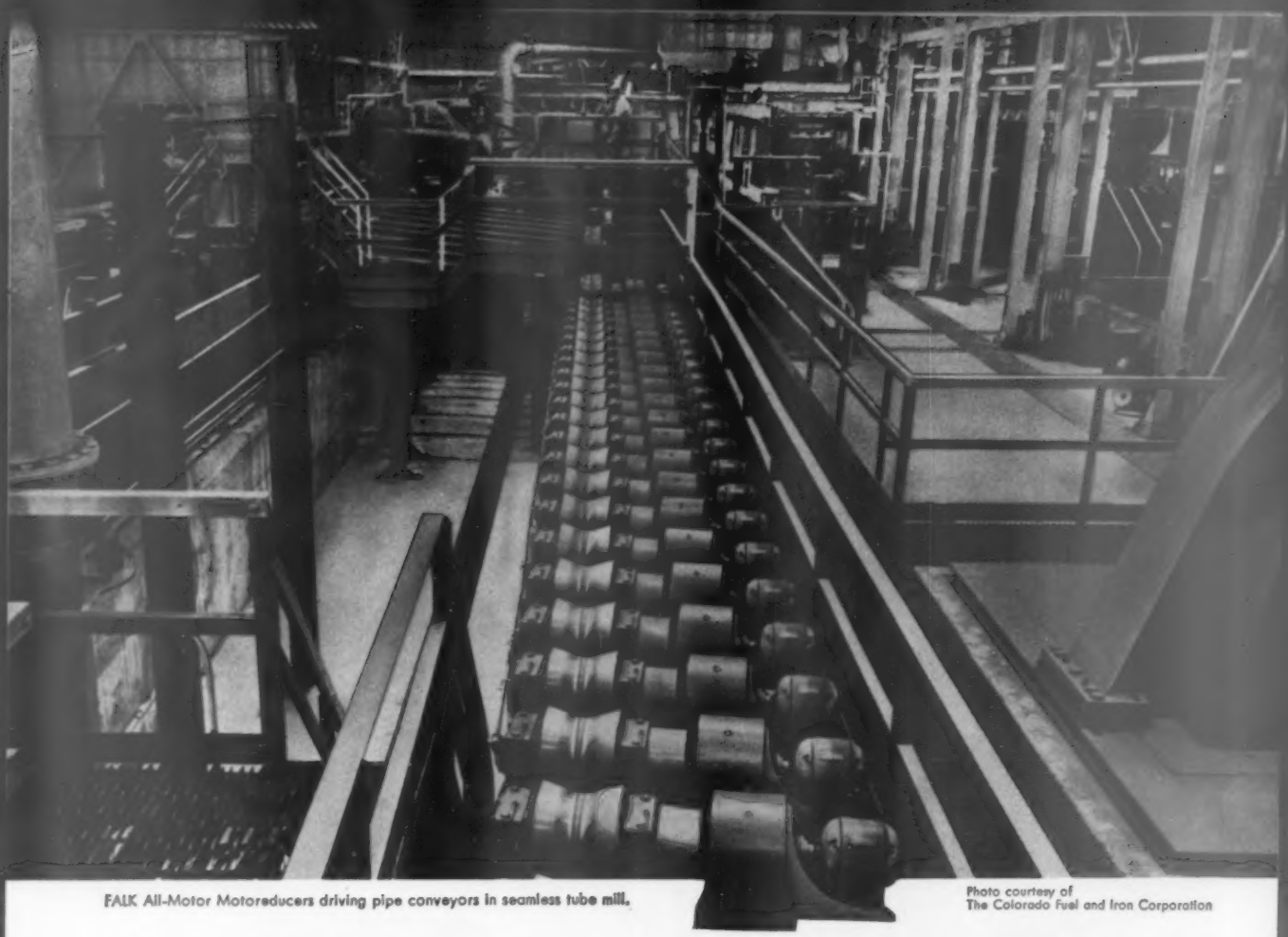
The biblical description of mankind as a product of the dust of the earth is literally true. And it is because the present dusts of the earth are rapidly being denuded of some needed mineral elements, and poisoned by millions of tons of insecticides, or pesticides, which accumulate in the soil through modern methods of agriculture, that our author, as well as many other scientists, are greatly disturbed. What is in store for future generations, not to mention the present one? This present generation is apparently concerned chiefly with such dread diseases as cancer, goiter, tuberculosis, etc.; but these, in the opinion of our author, are only symptoms of a denuded or inadequate soil from which our food comes—directly through plants or vegetables and indirectly from the meat or dairy products of animals more closely related to the soil, and its inadequacies or deficiencies.

Since sources of food for modern man are many, and are scattered over all the world, our author has confined his personal research to the kind and quality of grass—since this supplies through cows and sheep some positive and interpretable facts. These facts, established through close and long continued observation in his own locality, are then interpreted in the light of much worldwide research in medicine and other related branches of science, such as biological chemistry, etc. Our author expresses his purpose thus: "Thanks to grass and the grazing animal we will be able to get a splendid 'biochemical photograph' of the soil. And grass will be the means—and an admirable one at that—used to show, from different and unexpected points of view, how the elements of the soil control the functioning of our cells."

Please turn to page 138

**Soil, grass and cancer—Health of animals and men is linked to the mineral balance of the soil,* by Andre Voisin; translated from the French; Philosophical Library, Inc., 15 E. 40th St., New York 16, N.Y., price $15.00

Enter 1211 on Reader Card



FALK All-Motor Motoreducers driving pipe conveyors in seamless tube mill.

Photo courtesy of
The Colorado Fuel and Iron Corporation

You get these "extras" when you buy FALK *all-steel* Motoreducers

1. **Freedom from damaged housings.** The exclusive FALK *all-steel* construction gives full protection from cracked housings or torn-off feet...plus twice the ability of cast iron to maintain vital alignment.
2. **12-15% reserve load-carrying capacity** in the gears, by AGMA standards. The extra-depth, high pressure angle helical gears are another FALK exclusive ...they assure better operation and longer gear life.
3. **Highest known gear efficiency**—98½% per gear train under full load! This means maximum productive work for your power dollar.
4. **Longer service life**...advanced FALK design makes it possible to machine both bores for each shaft assembly at one time, thus eliminating possible accumulation of tolerances that occurs when individually machined parts are assembled. The result—better alignment of revolving elements that permits units to transmit rated capacity longer.
5. **Standard units to fit your needs.** Integral and All-Motor® Motoreducers are available in horizontal, vertical and right angle types...a type for every use.

Units are available up to 75 hp; output speeds from 780 rpm down to 1.2 rpm. Prompt delivery from factory, warehouse or distributor stocks. Ask your FALK Representative or Authorized FALK Distributor for *Bulletin 3100.*

THE FALK CORPORATION, MILWAUKEE 1, WIS.

MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS

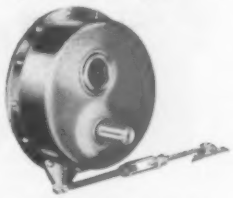
Representatives and Distributors in most principal cities

FALK

...a good name in industry

THE FALK ALL-MOTOR® MOTOREDUCER
the original All-Motor unit

(Shown) Horizontal concentric model. Also available in right angle and vertical types.



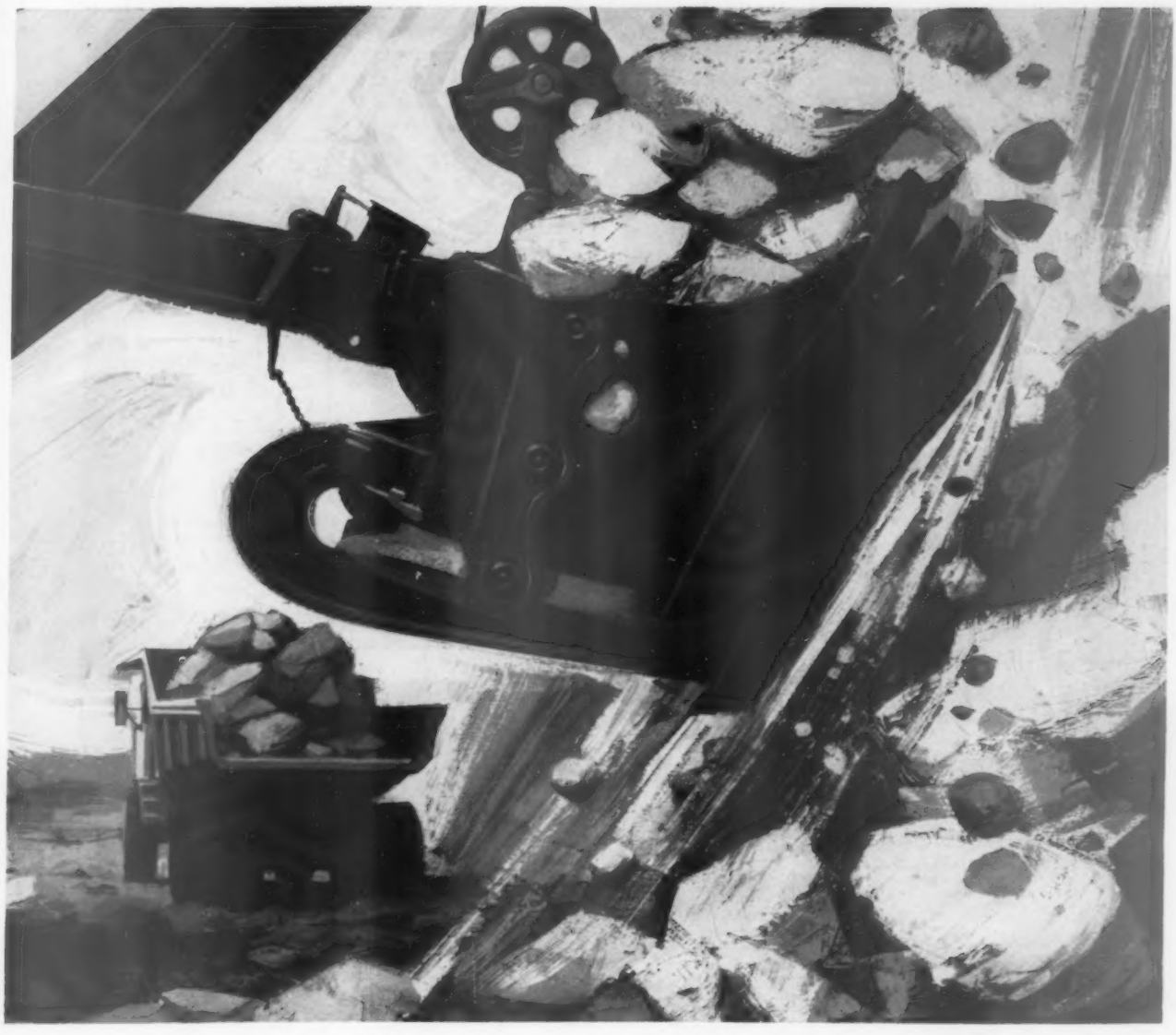
THE ALL-STEEL FALK® SHAFT MOUNTED DRIVE

Proved best for the countless industrial applications where a reducing unit mounting directly on shaft of the driven machine is indicated.

Units from 1/2 to 50 hp. Ratios —4:1, 14:1 or 24:1. Torque capacity up to 41,000 lb-in (in standard units). Prompt shipment from stock. For details, ask for *Bulletin 7100.*

TANK-TOUGH LINK-BELT SPEEDERS...

treat rock like dirt !



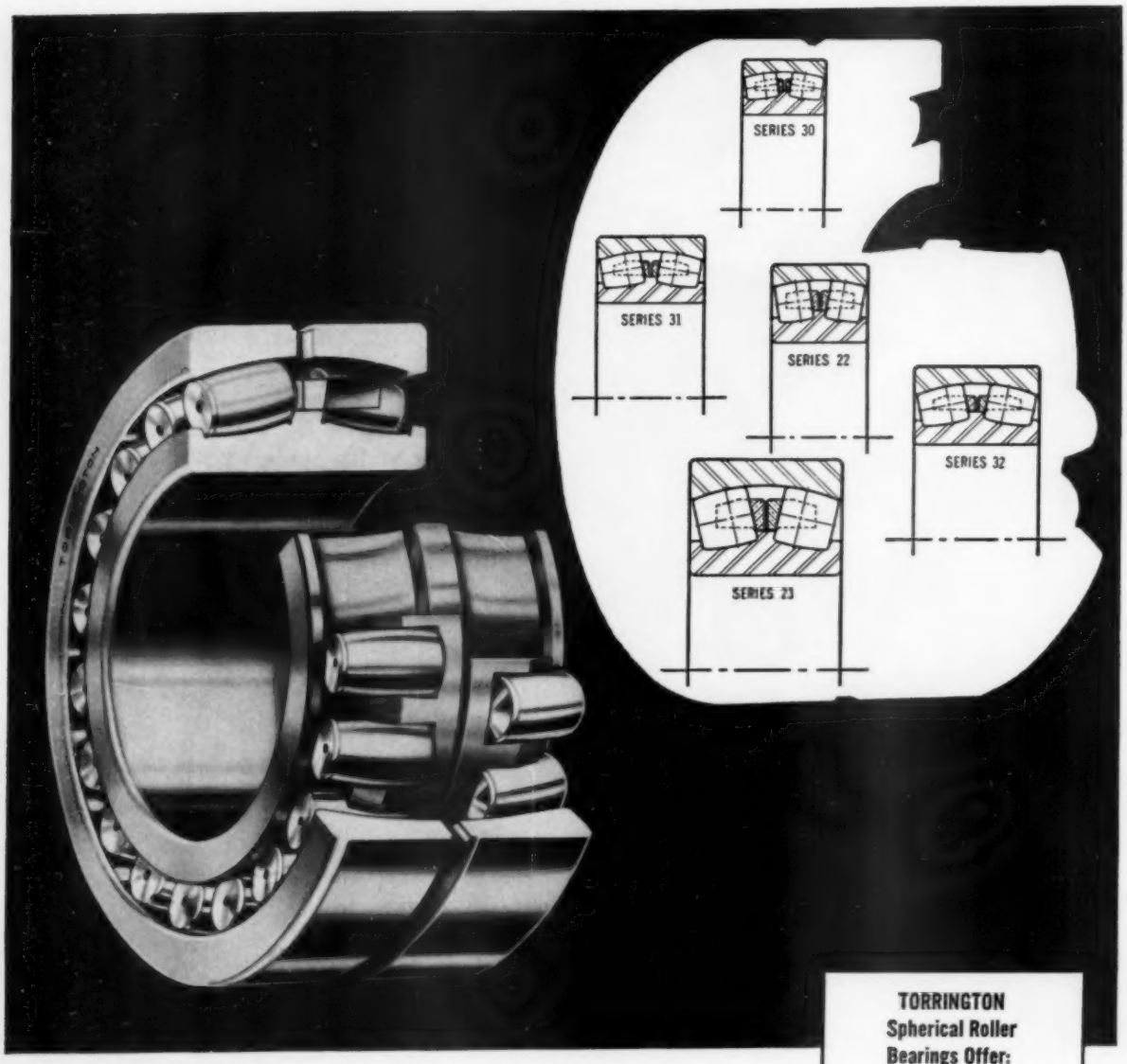
All-welded and stress-relieved — stamina, strength and guts to shrug off years of hard work! Tough, impact-loving Link-Belt Speeders thrive on the roughness of rock. They're built for rugged duty with all-welded, stress-relieved, jig-bored frame assemblies. Precision boring permits parts interchangeability, steps up machinery strength under stress. Extra-size, heat-treated machine components transmit more of rated hp to swing, hoist, travel, slam the dipper in. All-welded shovel-booms and dipper sticks . . . all-manganese buckets soak up strains without a shudder. Shafts, gears, bearings are precision aligned, stay aligned. No shims needed. Clutches are self-compensating for heat and normal lining wear.

Split-second Speed-o-Matic controls cut operator fatigue—power steer and more usable hp spurt rock output! Nudge a Speed-o-Matic power hydraulic control lever. Feel this brute obey! Trigger-fast shovel reflexes produce up to 25% more cycles per 8-hour shift. And finger-tip Speed-o-Matic power steering gives you double-quick maneuverability in, out, around blast rock, crusher or truck. No sloppy mechanical wear and repair. Payoff: top-profit rock production for *years* . . . at rock-bottom cost. For information on the complete line of shovels and cranes (½- to 3-yd., 8- to 75-ton capacities), see your distributor or write LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa. 101-60-N

LINK-BELT SPEEDER

It's time to compare . . . with Link-Belt Speeder

Enter 1202 on Reader Card



There's a Torrington Spherical Roller Bearing for your application

Bearings matched *exactly* to the job pay off in better performance, longer life, greater reliability. That's why it pays to specify carefully. And that's why it pays to choose Torrington Spherical Roller Bearings.

Whatever your space limitations or capacity requirements, the five series of Torrington Spherical Roller Bearings provide the right bearing for virtually every industrial application. You can design for straight bore or tapered bore with adapter. You can benefit from extra features such as lubrication groove and oil holes, or selected outside diameters.

Your use of Torrington Spherical Roller Bearings will assure exceptional operation and longer bearing life under the toughest conditions. They're made to Torrington's own uncompromising standards—the highest in the field of anti-friction engineering—by the manufacturer of every basic type of anti-friction bearing.

TORRINGTON Spherical Roller Bearings Offer:

- conformity of rollers to raceways
- integral center guide flange for stability
- positive roller guidance
- land-riding bronze cages
- maximum radial and thrust capacity
- controlled internal clearance
- electronically selected rollers
- inherent self-alignment
- even load distribution
- long, dependable service life

Send for new Torrington Spherical Roller Bearing Catalog #258

progress through precision **TORRINGTON BEARINGS**

THE TORRINGTON COMPANY South Bend 21, Indiana • Torrington, Conn.

Enter 1250 on Reader Card

WASHINGTON LETTER

by EDGAR POE

Union leaders Are split in Their choice

Organized labor leaders in the United States are divided in their preference among the Democratic presidential candidates, Senators John F. Kennedy of Massachusetts, Hubert H. Humphrey of Minnesota and Stuart Symington of Missouri.

At the same time, labor would rally behind former Gov. Adlai E. Stevenson of Illinois, should, by some chance, he be nominated as the Democratic standard bearer for the third straight time.

It is no secret in the Nation's Capital that labor wants no part of Vice President Richard M. Nixon, the Republican presidential candidate. Why? The principal reason is that organized labor just naturally favors the Democratic party. Furthermore, the union leaders just plain do not want Mr. Nixon for some reason.

As a result of the division among the labor union leadership, it appears that the leaders are going to remain quiet until after the National Democratic convention, which will be kicked off in Los Angeles Memorial Sports Arena July 11.

ICC plans to Expand staff

Interstate Commerce Commission is seeking to expand its enforcement program in the motor carrier field. The regulatory agency is asking Congress for an extra $850,000 to add 92 new employes to its staff. The additional sum would bring its total budget to $20,500,000 and its staff to 2,501 employes.

Pressure grows For anti-smog Device on Motor vehicles

Congressional pressure for measures requiring anti-smog devices on trucks, busses, and cars is growing. Thus far, the pressure is for voluntary installation by manufacturers and operators. Nevertheless, there is a threat that if the motorists don't do it voluntarily, the government will force them to make the installation in the immediate years ahead.

Secretary of Health, Education and Welfare Arthur S. Flemming opposes industry contentions that such regulations should be adopted by the states. He is advocating that anti-smog devices be made standard across the country.

Sen. Thomas H. Kuckel, Republican of California, whose state already has some anti-smog laws, is sponsoring legislation to extend government smog research indefinitely. Several Congressmen are advocating that automotive manufacturers install new devices using crankcase "blowby" devices. Trucks and busses are under pressure to install the burners to reduce expulsion of unburned carbons. The government would enforce the laws under general health and welfare powers because they have assertedly been linked to cancer, among other things.

Railroads Hope to regain Some traffic

Railroads are pushing hard for Interstate Commerce Commission approval of contract on agreed rates proposed by the New York Central. They believe this could be the first precedent-setting case.

If they win, rail officials believe they will be able to win back traffic in high rated manufactures and miscellaneous traffic lost to barges and trucks. Rail officials contend that earlier cases filed involve limiting factors which wouldn't set the precedent needed to open up use of agreed rates.

Congress cites Duplication At Pentagon

Congress is finally beginning to realize that it must take a stand against the staggering total of useless boards and committees that flourish at the Pentagon. There is no doubt about the wasteful duplication in buying of missiles.

Merger of the Army, Navy and Air Force is not around the corner, but there is growing belief in congressional circles that something must be done. Meantime, there are some military higherups advocating a "United States Department of Space," ranking with the Army, Navy and Air Force.

Tax reform Law proposal Put off until Next year

There will be no reform in tax depreciation laws this year. President Eisenhower's proposals have been put aside by the House Ways and Means Committee until its over-all hearings next year.

Lack of support and failure of industry to agree were the paramount reasons. The Chief Executive wanted to raise the tax on income from sale of depreciated business property, such as trucks and machinery, from the present 25 percent capital gains rate to 52 percent corporate rate. In exchange, he'd permit an accelerated depreciation.

Asphalt, cement Research in California

A paper by F. N. Hveem, materials and research engineer of the California Division of Highways on construction practices on cement-treated subgrades for concrete pavements, said that after 13 years use, a cement-treated subgrade is still in excellent condition. There is now 900 miles of this type of construction in California.

A survey of all sections over asphalt-treated subgrades indicates that "they average up equally well and in some cases better than the cement-treated subgrades. This may be partly due to the fact that asphalt treatment has been used only where clean sands or gravels were in place, and have not been applied to soils containing high percentages of clay as has often been the case of cement.

"Therefore, it can be concluded that with proper selection of materials either cement or asphalt can be used to form a suitable subgrade which will stay in place and withstand the vertical movement and pumping action of the pavement slab ends . . . The only steel used in California concrete pavements are the tie bars across the longitudinal center joint . . ."

Unemployment Insurance Proposal

A long debated plan that would establish minimum Federal standards for the state-operated unemployment insurance program is being pushed at this session. The measure would be broadened to cover several millions of additional workers. However, there is a large amount of opposition to this bill which would be another step of federal control. Like some of the others, this bill will have tough sledding.

The so-called depletion allowance bills will be up for consideration. These measures, of course, involve sand and gravel. The group of Senate and House Democrats pushing these bills are striking primarily at the oil and natural gas industries. Representative Phil M. Landrum, Democrat of Georgia, one of the co-authors of the Landrum-Griffin labor reform bill at the 1959 session, is again pushing hard for some additional labor union curbs.

Hoffa union Is organizing

From all indications 1960 will be one of the busiest years in the history of union labor in this country. Jimmy Hoffa and his powerful Teamsters Union are already hitting out at critics.

The McClellan Committee uncovered so much crookedness and wrong doing in the Teamsters Union that it shocked many people in this country. At the time the disclosures were made, there were demands that the union be cleaned up at once. Just how much cleaning up was done, the public does not know. Testimony showed Hoffa surrounded himself with racketeers and ex-convicts.

Senator John L. McClellan of Arkansas, the courageous Senate leader, knows that the powerful union with its bulging money bags is all set to conduct its own political activity this year. It is being called DRIVE.

DRIVE has put a number of senators and representatives and state representatives on its "must go" list. The Teamsters Union is planning on organizing down to the precincts in some sections of the country, preliminary to the political campaigns this fall and in connection with legislation that will come up next year.

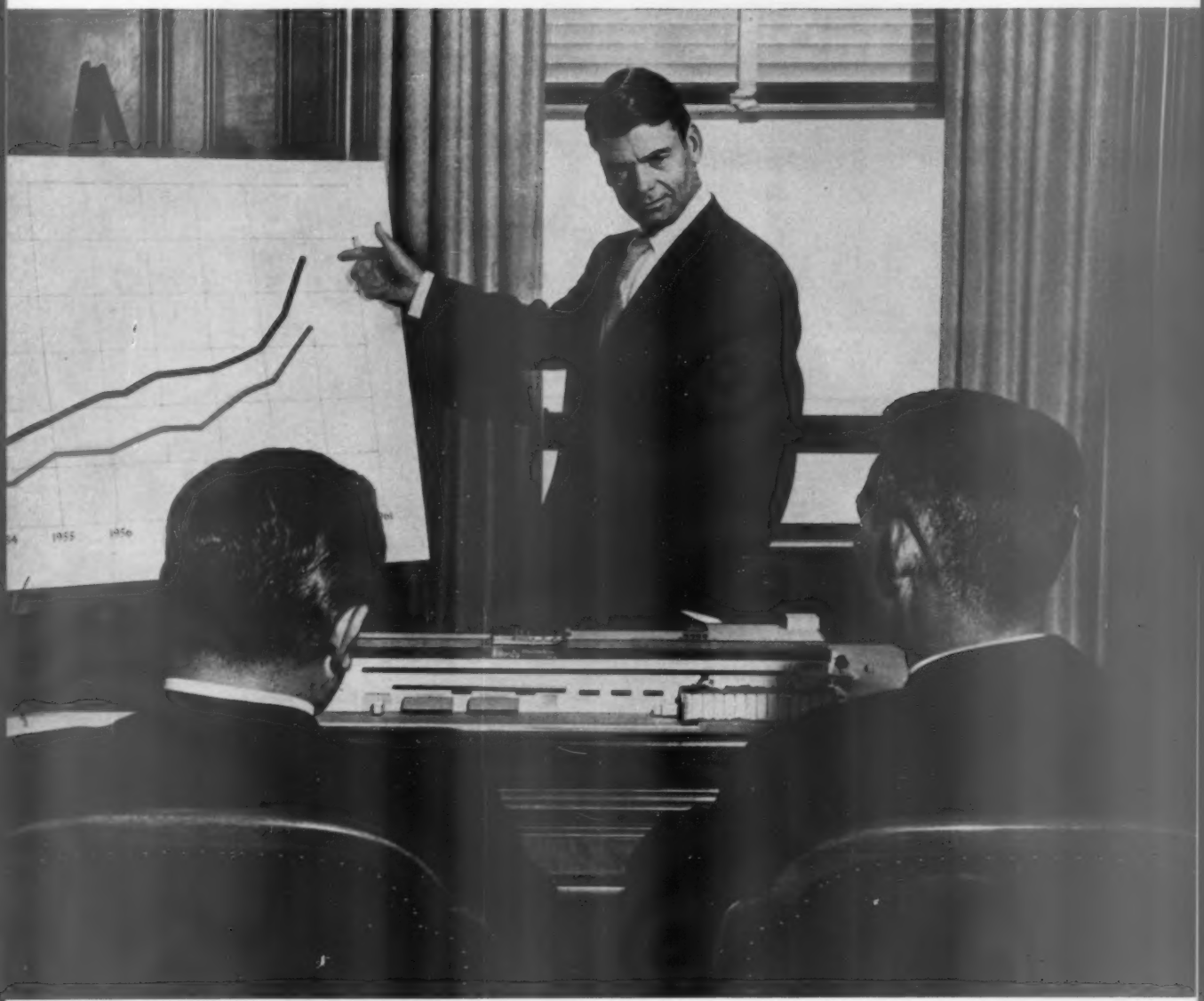
Hoffa and his Union opposed a one-year extension of the McClellan Committee. During its three years of functioning, the McClellan Committee—officially called the "Senate Select Committee on Improper Activities in the Labor-Management Field"—heard 1,500 witnesses, including some of the foremost racketeers and crooks in the country, who gave 15,000,000 words of testimony.

Government Sells rubber Stockpile

Sales by the government of its stockpiled rubber are running at the rate of better than 10,000 tons a month. Some 57,629 tons have been sold since the government began disposing its stocks last October. By 1968, the government will dispose of the total stockpile of almost a half-million tons.

Enter 1270 on Reader Card

Pre-Engineering by **KAISER ENGINEERS** answers basic plant expansion questions...



Profitability? Faced with the decision to expand your plant facilities, you should first determine whether all elements combine to form a pattern of future profitability. Independent analysis of all aspects of your proposed program is the *Pre-Engineering* service offered by Kaiser Engineers. The studies and evaluations furnished by KE Pre-Engineering represent only one phase of total KE services. Kaiser Engineers is an experienced designer and builder of all types of facilities for the Minerals industry. From Pre-Engineering through design and construction, Kaiser Engineers provides complete one-company service and ingenuity based on years of experience.

KAISER ENGINEERS

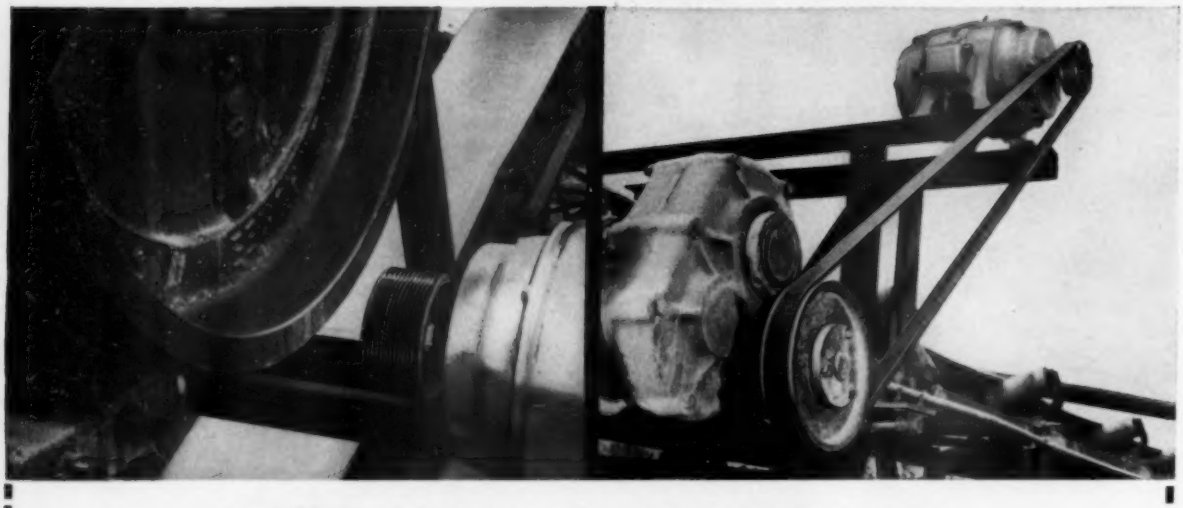
KAISER ENGINEERS engineers-contractors
Contracting since 1914

Oakland 12, Calif. — Chicago, New York, Pittsburgh, Washington, D.C.
Accra, Buenos Aires, Montreal, New Delhi, Rio de Janeiro, Sydney, Vancouver, Zurich

6229-M

More power...in less space

WITH MORE RELIABILITY



R/M POLY-V® DRIVE

- NO MATCHING PROBLEMS
- MAINTAINS GROOVE SHAPE
- COMPLETE CONTACT-PRESSURE
- CONSTANT PITCH AND SPEED RATIOS
- LESS MAINTENANCE—LESS TAKE-UPS
- LESS WEAR ON BELT AND SHEAVES

Power to spare is delivered by these R/M Poly-V Drives to assure trouble-free operation of the belt conveyors made by Lippman Manufacturing Company for an aggregates plant. Here's why. Poly-V Drive design provides greater horsepower capacity—delivers more power per inch of drive width than ever before possible with conventional multiple belt drives.

Poly-V features a *single* unit V-ribbed belt across full width of sheaves with mating grooves. It is not an assembly of V-belts. Single unit belt design eliminates belt length matching problems. These conveyors thus operate with minimum downtime and belt replacement costs . . . run cooler, smoother under *all* drive loads.

Just two cross sections of Poly-V Belt meet *every* heavy duty power transmission requirement. Ask your R/M Distributor for details about R/M Poly-V* Drive for your application.

Write for Bulletin M141

WHEN YOU CHANGE DRIVES...

*Patented

CONVERT TO POLY-V® AND BE SURE!

RM1C12

ENGINEERED RUBBER PRODUCTS ... MORE USE PER DOLLAR

RM

RAYBESTOS-MANHATTAN, INC.

MANHATTAN RUBBER DIVISION, PASSAIC, NEW JERSEY

RAY-MAN CONVEYOR BELT

Engineered for 45° Idlers

- TRAINS NATURALLY
- TROUGHS DEEPLY
- HOLDS FASTENERS
- RESISTS IMPACT AND RIPPING
- REQUIRES NO BREAKER PLY
- DOUBLE COMPENSATION RELIEVES OUTER PLY STRESS
- EXCLUSIVE "XDC" LONG-WEAR COVER

Every component of a Ray-Man Conveyor Belt is *precision proportioned* to give you a balanced belt construction, with as much as ⅓ longer life expectancy. It's the same as getting ⅓ more conveyor belt for your money. Further savings are possible, if you use 45° Idlers. Properly engineered, you can haul a fuller load, or install a narrower conveyor. Ray-Man is guaranteed against ply or cover separation at the hinge line where the 45° angle proves too sharp for regular belt constructions. Write for Bulletin M303.

HOMOFLEX HOSE

more flexible, weighs less than any hose for equal pressure

- SUPER-STRONG
- PRECISION BUILT
- NO PRE-SET TWIST—WILL NOT KINK
- INSEPARABLE TUBE-TO-COVER BOND
- UNIFORM INSIDE AND OUTSIDE DIAMETERS
- EASIER, SAFER COUPLING

Strong, lightweight, and "flexible as a rope"—Homoflex is the easiest handling hose and lasts longer. Made in types for air, water, other fluids and gases. Ask about other types of R/M rubber hose for your job applications. Write for Bulletins M620 and M694.

Enter 1201 on Reader Card

LABOR RELATIONS

A ROUNDUP OF ACTUAL DAY-TO-DAY IN-PLANT PROBLEMS AND HOW THEY WERE HANDLED BY MANAGEMENT MEN

How would you decide?

Can a senior employe be denied a promotion because he flunked a test?

What Happened: Jim Harvey put in a bid for a promotion when a vacancy opened up in a higher-paid job. He felt sure he would make it because he was the senior man and had a pretty good record with the company. Among other things, the new job called for the ability to "use gauges and measuring tools to produce quality work."

Harvey was a little rusty on this phase of the requirements but felt he would pick it up quickly after his promotion. One morning, with no advance notice, he was called into the personnel office and asked to read a micrometer. He was unable to do so. A junior employe, Harry Baker, was given the same test and passed it with flying colors. Baker got the job.

The company defended its action on the grounds that it tested the employe in an actual task, one that was a vital part of the job, and he failed. What other proof is needed that he isn't qualified.

"I was nervous," said Harvey. "This test was unfair. With a little practice I could learn to use the gadget. Teach me and give me a chance."

"We have a man who doesn't need any training. Baker can start right out at once, with no instruction. He gets the job."

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Thompson ruled: "The testing procedure used here is discriminatory. At its whim, the company picks out some aspect of the job and uses it as a 'test.' In this way, just by luck or chance, a junior employe might get a job over a senior man. I cannot accept the assumption that there must be initial competence in every and all aspects of a job. If a senior employe is generally competent, he should be given a chance to work out on a new job. A test cannot be used as the sole reason for turning a man down unless it says so specifically in the union contract. Jim Harvey should get the promotion."

Is a union official entitled to enter your plant any time he wants to?

What Happened: Al Johnson was a union steward and he worked on the first shift. Two workers who were on layoff asked Johnson to look into their grievances. They claimed that there were employes of lesser seniority working on the third shift. Johnson asked the foreman on the third shift for permission to enter the plant to investigate the complaint. The foreman said "no."

Johnson himself filed a grievance. Said he:

1. How am I going to process grievances if I can't get into the plant?
2. Management has no right to deny a union official the right to enter a plant for the purpose of grievance handling.

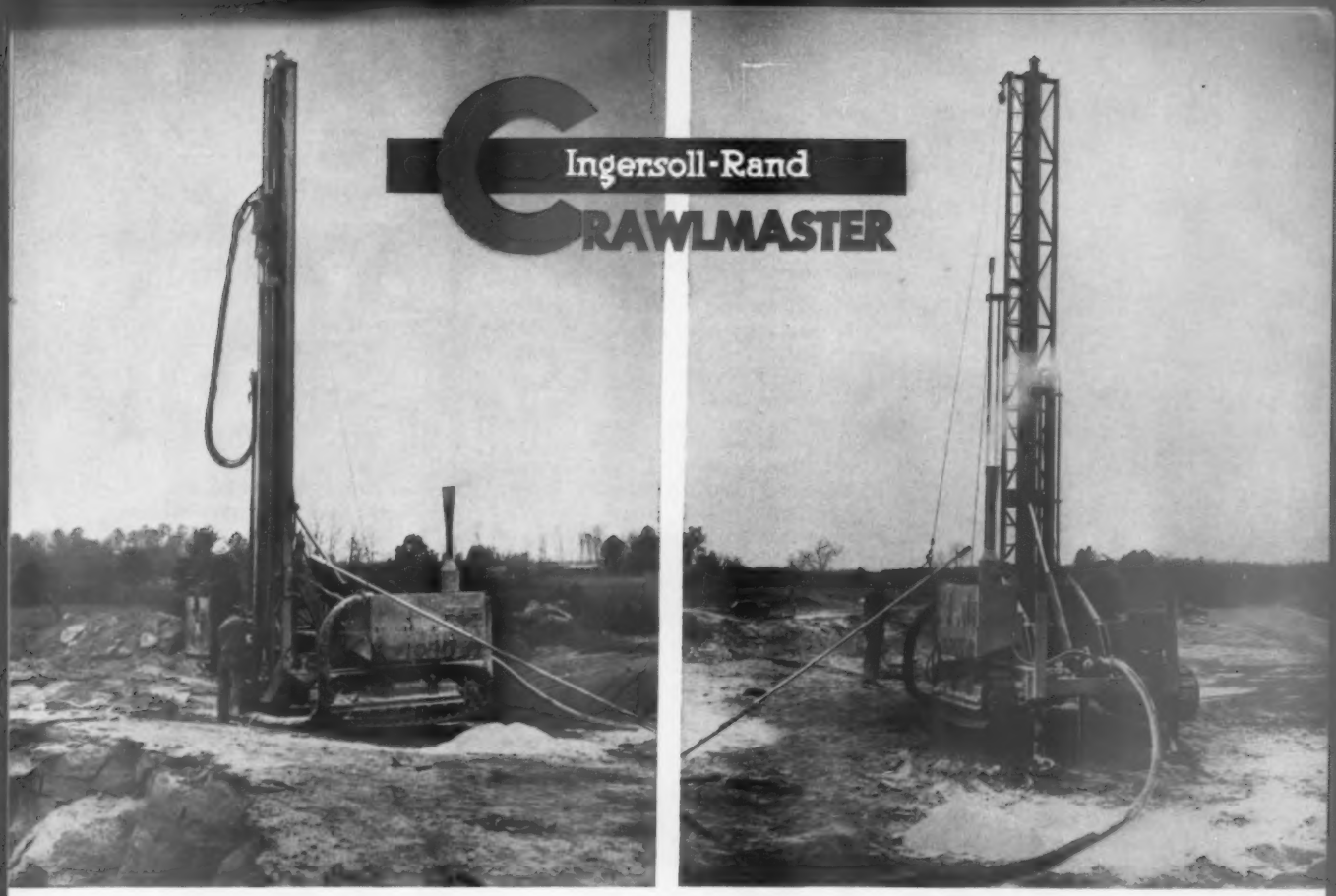
Said the company:

1. There is a steward on the third shift. Let him handle it.
2. A union official has no greater rights than other employes. We don't let employes enter the plant when they are not scheduled to work. So why should we let a steward come in on his free time?

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Tatum ruled: "Management had a policy of long standing which denied any workers or employes the right to visit the plant when not scheduled to work. The contract gave the union no special privileges on that score. The workers are clearly well represented on the third shift, and the grievance should be denied."

(Continued on page 32)



NEW heavy-duty crawler drill

MOST RUGGED—tons of sound design
MOST POWERFUL—outperforms 5½" drills
MOST VERSATILE—4" to 6½" holes, vertical to horizontal

The new Ingersoll-Rand Crawlmaster is a *multi-purpose machine* that meets every requirement for percussion, rotary or Downhole drilling of 4" to 6½" blast holes in any type of ground. Here are just a few of its outstanding features:

Constant-Pressure, Double-Acting Hydraulic Feed—smooth, infinitely-variable power for drilling pressure or pulling stuck steels. Drill won't jump ahead in pockets or fissures.

Simple Hydraulic Control Of All Tower Positions. Tilting of tower on yoke and raising or lowering of yoke hydraulically powered by separate cylinders. All throttles out-front for easy operation.

Throttle-Controlled Reverse Rotation permits fast uncoupling of steels without having to climb tower to reverse drill.

Ejector-Type Dust Collector has no moving parts to wear out or maintain. A simple air-jet does all the work.

Heavier—Extra weight is reflected in sound design assuring extra stamina for the toughest drilling jobs. Has rugged, tractor-type crawlers with enclosed gear drive.

Four 30" Stroke Hydraulic Leveling Jacks permit accurate tower positioning with maximum stability on rough terrain.

Hoist, Rod-Changer And Hydraulic Wrench greatly simplify addition or removal of steel sections.

Interchangeable drills and rotation units permit one machine to be used for percussion, rotary or Downhole drilling of 4" to 6½" holes, taking power from a 600 or 900 cfm portable compressor. For a new high in drilling speed and economy, ask your I-R engineer for the Drillmaster story. Or send for Bulletin 4211.

Ingersoll-Rand
33A5 11 Broadway, New York 4, N.Y.

A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK

continued from page 30

Can employes refuse to come in before their scheduled starting time?

What Happened: For many years the company had a practice of asking certain employes to come in a half hour earlier to get some departments ready for operations. The foreman never had any trouble in getting enough volunteers. Those who couldn't make it said so—and the foreman would ask others. The men got extra money for this ½ hr. overtime.

The company and the union got into a hassle over another matter. Gradually more and more employes began to refuse to "volunteer" for the early hours. Faced with a crisis, management started to order the workers to come in early . . . . . Most of them complied but Gene Mandek refused. He was given a 2-day disciplinary layoff. Gene took his "beef" up through the grievance machinery and finally to arbitration.

Gene based his refusal on the grounds that for years the assignment to the early ½ hr. was voluntary. Therefore the company had set a precedent and couldn't use its authority to make it compulsory now.

Management stood on its right to direct the workforce as the basis for its action.

Was management:
Right? ☐ **Wrong?** ☐

What Arbitrator Gilden ruled: The company did not relinquish its right to assign overtime work by not requiring it of those employes who did not desire it during the period when there were sufficient volunteers. But the right to require reasonable overtime always existed. Gene Mandek's grievance is denied."

Can a supervisor take a year before deciding that an employe is incompetent?

What Happened: Robert Meyer was in the inspection department. It was his job and responsibility to go over the work of other employes. He was on this job for about a year.

In assessing Meyer's work soon after his promotion to the inspection department, the supervisor found many instances of faulty and careless inspection. The foreman talked to Meyer about the errors. Time went on. Meyer's work did improve a little but not enough to satisfy company standards.

After a year, the foreman decided to demote Meyer to a job he could handle. This also meant a cut in pay. The union took up Meyer's case. It argued that the company had waited too long to decide on the employe's alleged incompetence. Therefore there must be some other reason—maybe it's because the worker is a union member.

The company's position was that it wanted to give Meyer all the chance it could for improvement. A hasty decision might be completely unfair. A year, the company said, is not too long to wait to determine the efficiency and ability of an inspector.

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator McCoy ruled: "A man may be so unqualified that supervision realizes it almost immediately or within a few weeks. Another man may display some ability and show such promise of improvement that supervision, while not entirely satisfied with his work, may not come to a definite conclusion that he will never acquire competence for a considerable period of time, perhaps a year or two. The demotion of Robert Meyer was not discriminatory, and was based on fair judgment.'

Can an employer distribute "economic literature" to employes without the union's consent?

What Happened: The company's contract provided for union bulletin boards so that the labor organization could communicate with its members. The clause in the contract limited the use of the bulletin boards to such things as announcements of meetings, election of officers, recreational and social affairs to be run by the union. In addition there was this proviso: "there shall be no distribution of political or advertising matter or other literature on the company's property."

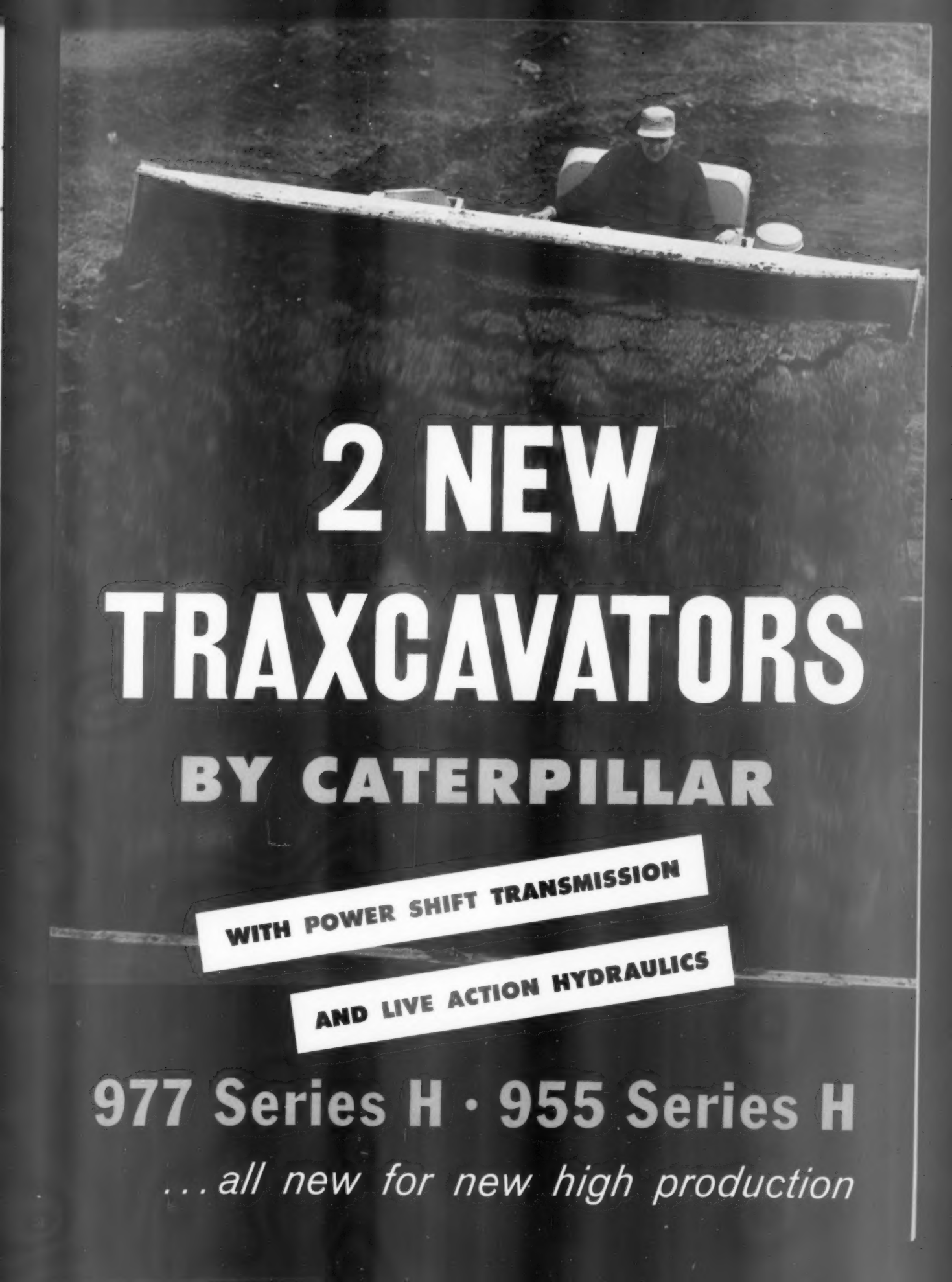
The company decided to install a reading rack which contained pamphlets on economics. The company's aim was to make employes more aware of some of the pressing issues of the day. The booklets included such titles as "Reform Our Tax Rates;" "How Profits Affect Your Pocketbook;" "What Union Members Write to Senator McClellan;" etc.

"You can't do that," said the union. "We have an agreement with you that no political literature will be distributed on company property. These racks are on company property, so take them off. Otherwise, let us distribute our kind of economic materials to the employes."

At arbitration the company said that it had every right to distribute whatever it wanted to. The union has no right to dictate what kind of material the company can hand out to workers —as long as the stuff was not illegal under the Taft-Hartley law.

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Seligson ruled: "The employer has the right to use his premises as he sees fit unless he has contracted away that right. The clause prohibiting the distribution of political or economic literature on company property pertains to the union bulletin boards and cannot be construed as a limitation on management. The grievance is denied." **END**


2 NEW
TRAXCAVATORS
BY CATERPILLAR
WITH POWER SHIFT TRANSMISSION
AND LIVE ACTION HYDRAULICS
977 Series H · 955 Series H
...all new for new high production

FASTER loads...lifts...hauls...

New Cat Series H Traxcavators!

There *is* a way to beat higher costs—and that's with increased production. For tractor-loader jobs, here's your answer in the new Caterpillar 977H and 955H Traxcavators. Designed to set a production pace far faster than the models they replace and any other tractor-loaders of comparable size, they're milestones in tractor-loader progress. With Cat power shift transmission and Live Action Hydraulics, they're machines that never stop. Look at the action pictures here and you'll see why. That's the 150 HP 977H with its 2½ cu. yd. bucket working. The 100 HP 955H with its 1¾ cu. yd. bucket is equally spectacular. Listed here are some of the features that make these machines the fastest working tractor-loaders ever built. For complete details, see your Caterpillar Dealer.

.00 sec.

READY TO GO. With the range selector in low, the operator has only to use the power shift lever for split-second changes of speed and direction. Between the range selector and the power shift lever, the new 977H has 4 speeds forward and 4 faster in reverse. However, for the average job, only the power shift becomes the operating lever. Automatic tilt control has positioned the 2½ cu. yd. bucket for digging.

4.2 sec.

FASTER LOADING. With 150 HP at the flywheel and an operating weight of 36,270 lb., the 977H develops up to 72,000 lb. push at converter stall without stalling the engine—push aplenty to break out big loads. Live Action Hydraulics deliver increased digging power to operate the bucket with greater speed and force for faster loads. The material here is an earth and gravel mixture, up to one inch in size.

13.2 sec.

FASTER HAULING. Using a light touch on the power shift lever to reverse instantly and pick up haul speeds, the operator returns at 4.0 average MPH over a total distance of 48 feet to the truck. Because the new 977H is heavier than the previous model and its center of gravity is 10% further to the rear, it has greater stability to handle with ease the heavier loads in the new 2½ cu. yd. bucket.

dumps . . . cycles!

18.0 sec.

FASTER DUMPING. The 977's bucket reach of 39½" at 9' 4" dump height easily clears this 7' 8" high, 10 cu. yd. truck. With this reach, the operator can cast the load where he wants it without time-wasting jockeying. Automatic kick out on the lift controls further reduces bucket maneuvering time. Dumping completed, the operator moves the power shift lever for instant return toward another load.

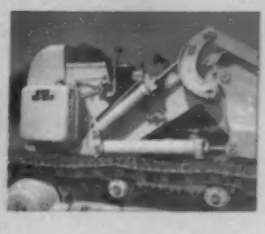
26.4 sec.

FASTER RETURN. With a return time of 8.4 sec., the total cycle time for the 977 was 26.4 sec. In a typical job study, the average cycle time per truck load was 117.6 sec. In 60 minutes the 977H loaded 30.6 trucks with a total of 306 cu. yd. This is typical of the outstanding performance you can expect from the 977H – and, in its capacity, from the 955H. Nothing in their size range can match the Traxcavators that never stop for fast cycles and high production!

NEW POWER SHIFT TRANSMISSION

One lever—that's right, one lever gives split-second changes in speed or direction to slash cycle times and increase operator efficiency. This Caterpillar exclusive was designed especially for the 977H and the 955H.

NEW LIVE ACTION HYDRAULICS



Another Caterpillar first. Live Action Hydraulics provide faster lifting speed and greater lifting capacity without robbing power from the tracks. The 977H packs 41% more hydraulic lifting power—955H, 23% more than former models.

MORE HORSEPOWER WITH NEW CAT TURBOCHARGED ENGINES

Up 50% on the 977H—its new Cat D333 Engine develops 150 HP at the flywheel. Up 43% on the 955H with a new Cat D330 Engine that develops 100 flywheel HP.

NEW INCREASED BUCKET CAPACITY

An 11% increase on the 977H with new 2½-cu.-yd. bucket —and a 16.6% increase on the 955H with new 1¾-cu.-yd. bucket. To handle the heavier loads, bucket linkage on both machines has been strengthened.

NEW HEAVY-DUTY UNDERCARRIAGE

Built to stand up under the toughest jobs, the new undercarriage on both machines features larger, stronger track components that also increase stability . . . lifetime lubricated rollers that need no lubrication until rebuilding . . . and track guiding guards welded to the roller frame for positive track alignment. The 955H also features a new 6-roller track frame.

FAST TRAVEL SPEEDS

977H . . . Forward		955H . . . Forward	
Low	High	Low	High
2.0 MPH 1st	2.5 MPH 1st	2.1 MPH 1st	2.7 MPH 1st
3.6 MPH 2nd	4.7 MPH 2nd	3.9 MPH 2nd	4.9 MPH 2nd

Reverse speeds 25% faster than forward

MORE HIGH PRODUCTION FEATURES

Other features on both machines include a new, two-cylinder high-speed gasoline starting engine for positive starts in any weather . . . and a new, dry-type air cleaner that removes 99.8% of all dirt from intake air even in the worst dust conditions, cuts maintenance time as much as 75%. Retained features include 40° bucket tilt back . . . automatic bucket positioners and kick out . . . 3-grouser track shoes . . . and quick-change attachments that multiply the machines' usefulness.

PACE-SETTING POWER PLUS VERSATILITY

in the new Cat Series H Traxcavators

SIDE DUMP BUCKET Directly interchangeable with the standard bucket, the side dump bucket provides increased versatility for Series H Traxcavators. It eliminates turning and requires less loading space – to sum up, lowers cycle times for even greater production. Capacities: 977H – 2⅝ cu. yd.; 955H – 1¾ cu. yd.

You've seen how increased horsepower, power shift transmission and Live Action Hydraulics make the new 977 and 955 Series H Traxcavators the fastest working tractor-loaders in the field. That means higher production for you not just on one job application, but on many—because of the many attachments available with both machines. Bar none, Traxcavators are the most useful machines you can own. With attachments, you can always keep them working—and working *profitably*.

Have you checked your equipment line-up recently? There may be machines in it that are no longer paying their way—or not earning *all* the profits they should in light of today's more efficient units. A comparison of your existing tractor-loaders with the new Series H Traxcavators might easily prove these new machines would increase your output and profits far more than you imagine.

Get the down-to-earth facts about the new Series H Traxcavators from your Caterpillar Dealer. Better still, ask for a demonstration. See for yourself how they set a new production pace on the toughest kind of job!

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

BORN OF RESEARCH PROVED IN THE FIELD

PEOPLE IN THE NEWS

Western editor for "Rock Products"

JOHN H. BERGSTROM, San Bruno, Calif., has joined ROCK PRODUCTS as western editor. A graduate of the University of Michigan with a BA degree in journalism, Jack formerly served with Western Machinery Co. as public relations and publicity manager. Previously he was staff writer and photographer for the Pacific Telephone Magazine of the Pacific Telephone and Telegraph Co. He is active in the San Francisco Junior Chamber of Commerce and at present is serving as publications vice chairman of the public relations committee of the JC.

We welcome Jack to the staff of ROCK PRODUCTS and wish him the best of luck.

Wallace Riddell honored

WALLACE C. RIDDELL, director of research for Kaiser Gypsum Co. until his retirement in 1955, was honored recently when the company decided to permanently commemorate his years of service and loyalty not only to the company but to the entire gypsum industry, by dedicating the Wallace C. Riddell Analytical Laboratory at its Antioch, Calif., gypsum products plant. Claude Harper, vice president and general manager; Bob Costa, vice president and assistant general manager; and other officials of the company were present at the ceremony.

Mr. Riddell, an internationally recognized authority on the physical chemistry of gypsum, has been interested in gypsum since his discovery in 1911 of a deposit of gypsum on San Marcos Island and establishment in 1925 of the Standard Gypsum Co., predecessor of Kaiser Gypsum Co. Prior to that he managed a number of gypsum plants and quarries in western United States. When Kaiser purchased Standard Gypsum in 1940, Mr. Riddell directed production for several years and then was research director.

Huron Portland appoints two

Don Rightenburg

DON RIGHTENBURG has been named Detroit district sales manager of Huron Portland Cement Co. Mr. Rightenburg, who has represented the company for some time in the Detroit area, replaces John Matthews, retired.

At the same time, the appointment of A. Donald Roda as credit manager of Huron Portland was announced. Mr. Roda has been with the company since 1951.

Louisville board chairman retires

EUGENE D. HILL, SR., has retired as chairman of the board of Louisville Cement Co., Louisville, Ky., after 38 years of service. Mr. Hill joined the company in 1922 as assistant sales manager. In 1930 he was elected vice president and a director, and in 1939 was made president, succeeding William S. Speed, who then became chairman of the board. In 1958, Mr. Hill was elected chairman of the board and relinquished his presidential duties to Boyce F. Martin, who is also chief executive officer. Mr. Hill is a graduate of Georgia Institute of Technology.

Ray K. Hartsock, vice president, also has retired. He joined the engineering department at Speed, Ind., in 1923 after graduating with honors and an engineering degree from Rose Polytechnic Institute. In 1925, he went to Akron, N.Y., to supervise construction of the new Brixment plant being built there, and became its first superintendent. He returned to Speed in 1937 to become superintendent of the Speed plant. In 1950 he was made a vice president.

(Continued on page 40)

After 25 years' service in the field

MOST ACCURATE GRADATION FOR HIGH TYPE SPECIFICATIONS

Horizontal screen cloth openings are at a right angle to the fall of the material and the full area of each opening is available for sizing. More material of the proper size goes through each opening to assure closer grading of a greater volume of material. With Cedarapids, you get the accurately graded aggregate you need to meet the high-type specs so common today.

CAPACITY AND VERSATILITY TO FIT ALL AGGREGATE SCREENING JOBS

There's a size and type of Cedarapids Screen to meet practically all aggregate specification and capacity requirements. Sizes range from 3' x 8' to 60' x 16', are offered with many different screen deck arrangements, and can be equipped with spray bars to produce washed aggregate. Rip-rap screens are offered in both horizontal and inclined models.

CEDARAPIDS HORIZONTAL SCREENS

are still *First Choice** for profit

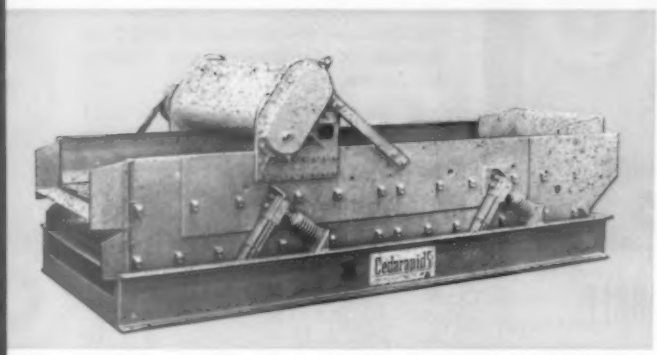
You get 12½% more screening area, up to 30% greater screening capacity, with Cedarapids Horizontal Screens—only on a *horizontal* screen is every screen cloth opening 100% effective. Think what this one Cedarapids benefit will do to increase your production and profits! And you get higher output of exact-specification products. You save money on lower maintenance costs. Cedarapids' expertly engineered design and top quality construction, typified by fully stress-relieved screen boxes and frames, assures a long, low-cost service life.

This combination of Cedarapids-engineered benefits (plus the many others there's no room here to mention) is the reason why the Cedarapids Horizontal Screen was recognized as the Number One producer in 1935—*and is still first choice today!*

Find out how Cedarapids can help you engineer more production into your plant, and cut the cost per ton. See your Cedarapids dealer today.

**Based on the results of a recent survey. Details upon request.*

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa

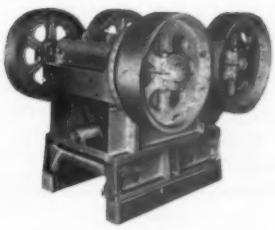


Cedarapids Built by IOWA **engineered for lowest cost per ton**

A complete line of Cedarapids components — production-balanced for your needs — produce *more* for *less*.

DOUBLE IMPELLER IMPACT BREAKERS

Exceptionally high capacities, plus high reduction ratios which often eliminate the need for auxiliary secondary crushers, screens, conveyors, etc., make Cedarapids Impact Breakers highly profitable in quarrying operations. Six models, from 22" x 22" to 53" x 60", meet your capacity needs. Portable models also available.

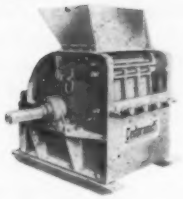


TWIN-JAW CRUSHERS

An exclusive Cedarapids design! Two movable synchronized jaws, operating at high speed, give you 40% to 100% greater primary crushing capacity than single-jaw crushers of comparable size. 5 to 10 times longer jaw life cuts maintenance. Available in three sizes. Single-jaw crushers also offered in 13 sizes.

ROLL CRUSHERS

Where high capacities of fine crushed products are required, Cedarapids roll crushers are ideal units for secondary reduction. Six model sizes offered to meet volume demands and balance primary production.



HAMMERMILLS

Exclusive Cedarapids Hammermill features produce a much finer quality of product, and size for size, produce more tons per hour than other similar types of equipment. 4 sizes available.

***Plus* bins, feeders, conveyors, vibrating grizzlies, washing plants.**

Send for this Bulletin TODAY!

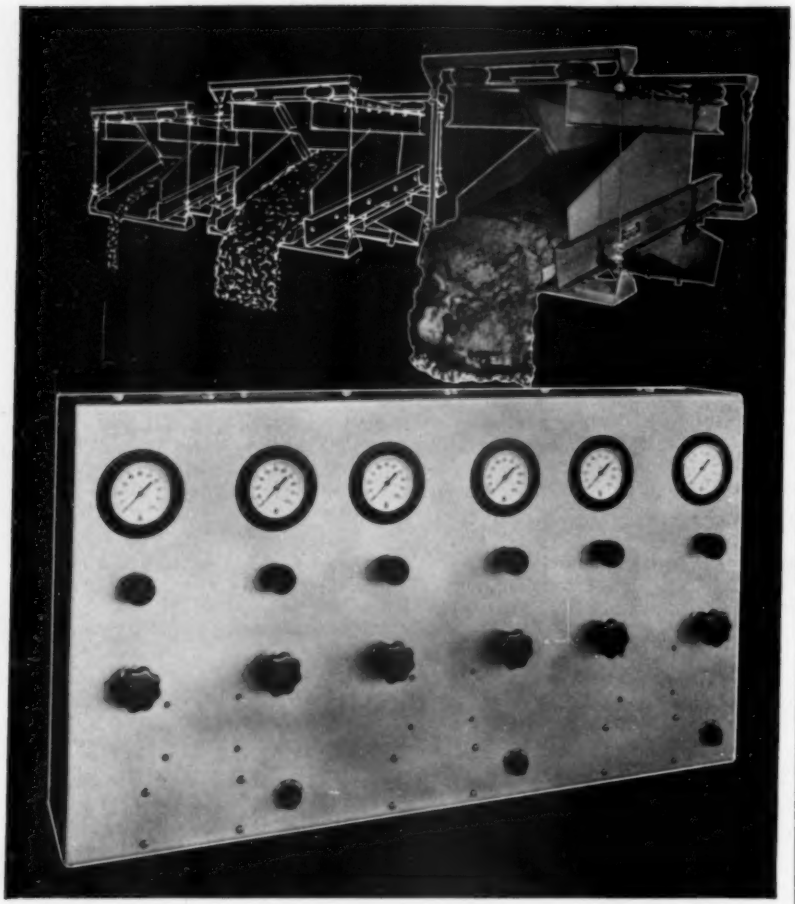
It describes the complete line of Cedarapids Screens and explains the many exclusive features that help you increase your plant production . . . and profits.

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa

Gentlemen: Please send Screen Bulletin CS-6. Also send details about equipment I have checked.

☐ Engineered Stationary Plants ☐ Portable Aggregate Plants
☐ Components _____ (specify type) ☐ Bituminous Mixing Plants
☐ Bituminous Pavers

Name _____ Title _____
Company _____
Address _____
City _____ State _____



From a TORRENT to a DRIBBLE...
AMPLITROL means precise control

With Carrier Amplitrol Feeders you can control discharge rates from ANY distance. Carrier Feeders give you precise manual OR automatic control in response to signals from bin-level indicators, process-alarms, scales, load cells, ball mill or crusher drives.

Speed and Accuracy Combined
Three separate Amplitrol Feeders are controlled simultaneously with the control panel shown above. Used in a batch weighing system, the controls produce a fully adjustable high-low feed rate cycle for each feeder. For maximum batching speed with minimum batch variation, Amplitrol feeds the major portion of a batch at torrent rates—the remainder at a dribble. Shutoff at proper weight and recycling is automatic.

For more information, write Carrier Conveyor Division, CHAIN Belt Company, 213 North Jackson St., Louisville 2, Ky.

CARRIER CONVEYOR
~~NATURAL-FREQUENCY~~
VIBRATING EQUIPMENT
CHAIN BELT COMPANY

CONVEY • FEED
DEWATER • SCREEN
COOL • DRY
SCALP • COAT
DISTRIBUTE • ELEVATE

Enter 1254 on Reader Card

PEOPLE IN THE NEWS

(Continued from page 37)

Crushed Stone group elects W. D. Milne

W. D. MILNE, president of the Kentucky Stone Co., Louisville, Ky., has been elected president of the Kentucky Crushed Stone Association. Also elected were W. B. Paynter, Jr., president, Kentucky-Virginia Stone Co., Middlesboro, first vice president; Norman J. Weidemer, vice president, Hopkinsville Stone Co., Inc., Hopkinsville, second vice president; and Miss Margaret M. Smith, secretary-treasurer, Central Rock Co., Lexington, as the treasurer.

Named directors were W. R. Harrod, vice president, Falls City Stone Co., Fern Creek; David McLellan, plant manager, McLellan Stone Co., Horse Cave; Frank Hamilton, Georgetown; Powell G. Potts, president, Southern Stone Co., Inc., Franklin; Bill Osborne, Elizabethtown; and Tom Ballard, of Geoghegan and Mathis, Bardstown.

Patrick Hoy heads Material Service

PATRICK H. HOY has been elected president of the Material Service Division of General Dynamics Corp., Chicago, Ill. In accepting the position Mr. Hoy ends a 15-year career as a top hotel executive. He was president of the Ambassador and Sherman hotels in Chicago.

Lester Crown, a vice president of Material Service and president of Marblehead Lime Co., has been named vice president of General Dynamics. Mr. Crown joined Material Service in 1950 as an engineer. He previously held positions as a metallurgist and a research chemist.

General Crushed Stone new appointments

JOHN W. MATTHEWS has been appointed superintendent of the Verdon, Va., plant of The General Crushed Stone Co., Easton, Pa., and Alfred Van Vaulkenburg has been made superintendent of the Jordanville, N.Y., plant.

Thomas C. Foote, formerly assistant to the vice president, John Rice, Jr., has been named general sales manager. J. Walter Harward has been promoted

(Continued on page 44)

Enter 1255 on Reader Card

NEW POWER-CRATER Engine joins A-C line

G-138

39 bhp at 1800 rpm

The 4-cycle, 4-cylinder G-138 is available as an engine assembly or in open or enclosed power units — equipped to fit *your* particular job.

Like other engines in the Allis-Chalmers line, the new G-138 is *tough* and *economical*. It's tough because it was built for demanding tractor service. One look at its rugged construction convinces you it will do your job *better*.

Mass production makes the G-138 economical to buy — advanced short-stroke design makes this POWER-CRATER engine economical to run. Exclusive Allis-Chalmers combustion chamber, with crater-shaped pistons, controls combustion for big-power output as well as excellent fuel economy. Advantages like wet-type cylinder liners make for low-cost, easy maintenance. Parts and service are close by at thousands of Allis-Chalmers dealers.

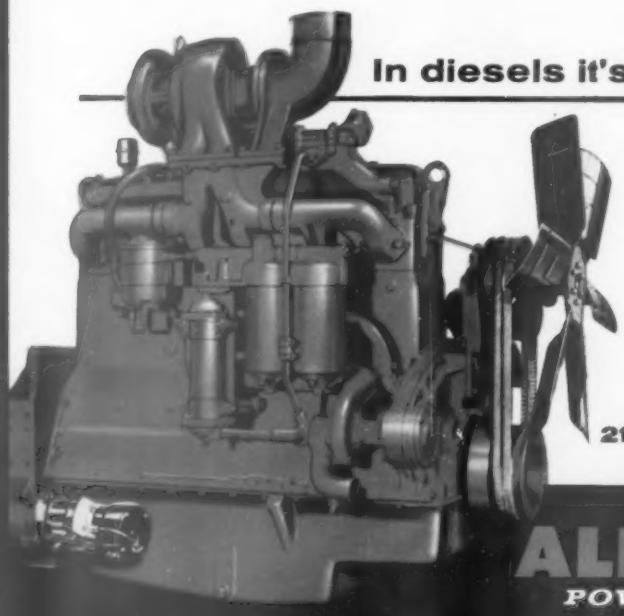
Put new PEP* into *your* jobs. Arrange today to have one of these tough, economical engines go to work making more money for *you*. Allis-Chalmers, Milwaukee 1, Wisconsin.

***Packages of Economical Power**

	G-138	G-149	G-226
Displacement, Cu In	138	149	226
Maximum horsepower (gasoline)	39@ 1800 rpm	45@ 2000 rpm	67@ 1800 rpm

POWER-CRATER is an Allis-Chalmers trademark

In diesels it's the PERFORMANCE PROVED 21000 and 16000



The amazing 21000 and 16000 diesels are exceeding expectations wherever they are used. The turbocharged 21000 uses *8 to 27 percent less fuel* than any other engine in its class — and has stamina to match! Torque is consistently high, acceleration is immediate. Starting is fast, too, even at sub-freezing temperatures and without starting aids. Find out more about these and other diesels in the Allis-Chalmers line — various models and sizes to 516 hp.

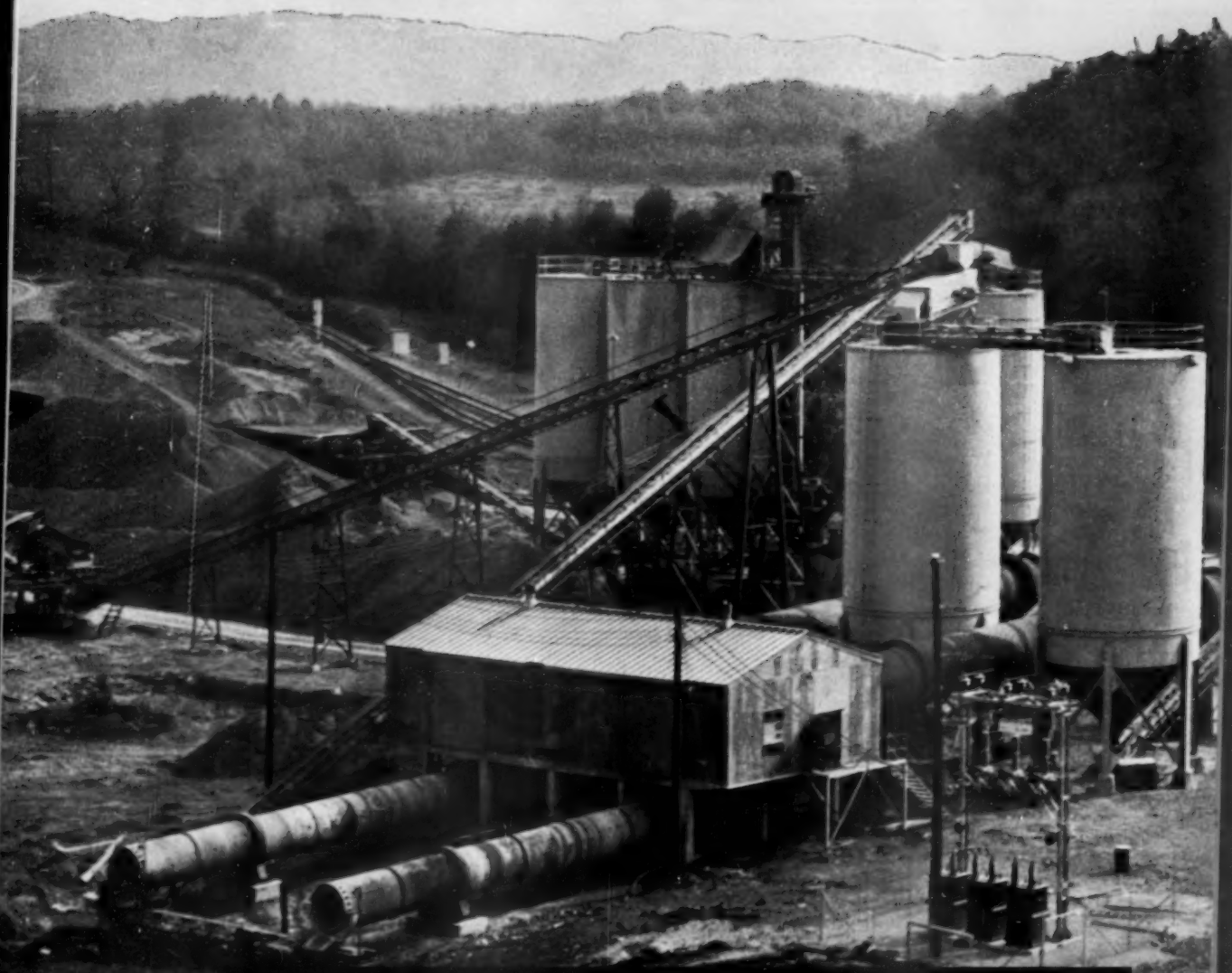
21000 diesel 340 hp

BE-21

ALLIS-CHALMERS

POWER FOR A GROWING WORLD

PROFIT INSURANCE...



Yes . . . when the going gets "hot and heavy," when you're running double shifts or around the clock . . . that's when you need the "insurance" of having SECO SCREENS on your job.

The rugged dependability that's part and parcel of every SECO SCREEN . . . the ability to produce accurately sized materials in consistently high volume when the chips are down . . . these are the reasons more and more operators are making the "BIG SWITCH" . . . the "SWITCH TO SECO". So to protect your profits with the best kind of "profit insurance" you can buy . . . put SECO SCREENS on-the-job in your plant for years and years of "Performance That Means Profit!"

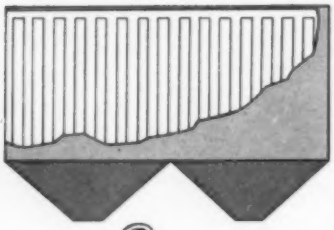
Write now for Free Literature
SECO 4-Bearing Catalog No. 204 and
TWIN BEARING Booklet TB-21

SCREEN EQUIPMENT CO., INC.
BUFFALO 25, NEW YORK

starts with
SECO SCREENS
in your plant!
SECO
"TIME CONSCIOUS"
VIBRATING SCREENS

SINCE 1870 SLY

SLY DUST FILTERS For FULL-TIME OPERATION

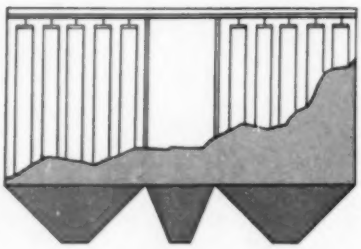


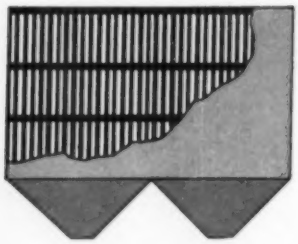
1900's SLY INTERMITTENT DUST ARRESTER

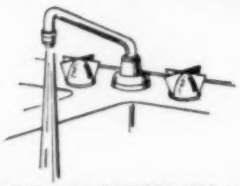
Required complete shut-down periodically for filter bag cleaning.

1930's SLY AUTOMATIC CONTINUOUS TUBE-TYPE FILTER

Sections had to be shut-down alternately for cleaning. Varying suction resulted in incomplete collection.







TODAY NEW SLY "ROLL-CLEAN" DYNACLONE®

Provides uniform suction at dust sources to collect all the dust.

Continuous Dust Suppression Through Constant Suction

The Dynaclone operates continuously, 24 hours a day if required. There is no fluctuation in air volume. This means complete dust collection.

The Dynaclone keeps itself clean automatically. Resilient rubber rolls form a positive seal as each row of bags is cleaned by atmospheric air. A single exhaust fan provides *both* suction for dust collection and air for cleaning. No auxiliary blowers required.

The Dynaclone provides 20 to 40% more cloth in a given space than any other dust filter. Space saved means lower installation costs, simplified piping and ductwork.

New "Resist-O-Wear" filter bags offer 2 to 3 times more bag life. And any bag can be changed without disturbing any other.

More than 40,000 Sly Dust Filters in operation, including over 1,000 Dynaclones. Get complete details . . .

SEND FOR 36-PAGE CATALOG 104

THE W. W. SLY MANUFACTURING CO.

4746 Train Avenue • Cleveland 1, Ohio • Offices in Principal Cities • Overseas Licensee: Andrew Air Conditioning Ltd., London S. W. 1, England

Enter 1256 on Reader Card

PEOPLE IN THE NEWS

(Continued from page 40)

to division sales manager. He was formerly district sales manager at Glen Mills, Pa., and will be succeeded by Charles A. Reid, who has been sales engineer at Glen Mills.

Keystone Cement elects C. E. Shearer chairman

CHARLES E. SHEARER has been elected chairman of the board of Keystone Portland Cement Co., Philadelphia, Pa., in addition to his duties as president. C. H. Pettus, Jr., has been named senior vice president and treasurer. He had been secretary-treasurer. H. Donald Grim was elected secretary and assistant treasurer.

Standard Lime & Cement executive appointments

LEWIS RUMFORD II has been named president of Standard Lime and Cement Co., Baltimore, Md., a division of American-Marietta Co., and Walter L. Specht has been made executive vice president. Other officers named are W. L. Tribull, vice president of industrial sales; R. J. Troja, vice president of building materials sales; and J. A. Kirk, Jr., vice president of traffic. W. E. Garvin is vice president of operations and S. C. Magersupp has been appointed secretary-treasurer.

Bestwall production manager takes on new duties

GLENN E. WILSON has been named to supervise production at the new Fort Dodge, Iowa, plant of Bestwall Gypsum Co., Ardmore, Pa., in addition to his duties as production manager of the Akron, N.Y., Grand Rapids, Mich., and Pryor, Okla., plants. A resident of Malvern, Pa., Mr. Wilson is a graduate of the Missouri School of Mines.

Chairman of Board

C. W. PLANTE, president and a director of Gladding, McBean & Co., Los Angeles, Calif., has been elected chairman of the board of directors.

(Continued on page 50)

Enter 1257 on Reader Card

Day in, day out, depend on WEMCO

for a superior product — at lowest cost.

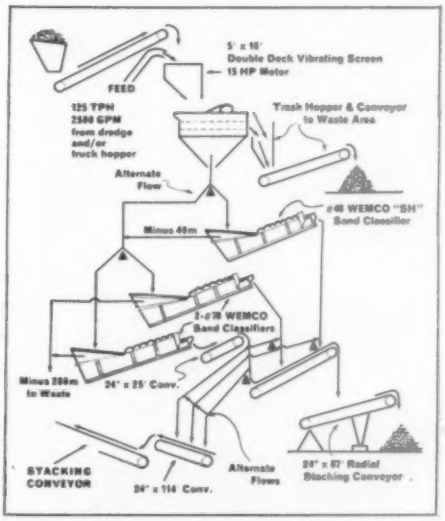
John G. Wisneski, Plant Superintendent (above), and Frank Lapa, Sand Division Manager, Sayre & Fisher Sand Co., Sayreville, N. J., say:

"We highly recommend Wemco Sand Prep Machines to anyone"

"Wemco Sand Prep Machines are indispensable in our production of specification aggregate for concrete, mason, plaster, asphalt, brick sand and for various industrial uses. Wemco flexibility permits quick adjustment to varying requirements of material. Changes can be made by means of the adjustable end weirs and by re-blending products. Operation is trouble-free, and we've eliminated downtime and parts replacement. Wemco's lifting device has saved us in many a tight spot, including push-button start-up under overloading or in sub-freezing weather. We recommend Wemco to anyone . . ."

With Sayre and Fisher, as with other top aggregate producers, dependability is a must for profitable operation. Only Wemco meets all requirements with these features: slow spiral speed . . . multiple pitch spirals . . . large and quiescent pool . . . and the exclusive Lifting Device.*

Get the complete story on Wemco's consistent superiority on the job—from your nearest Wemco representative.



WEMCO®

a division of

Western Machinery Company

650 Fifth Street • San Francisco, Calif.

In Canada: Western Machinery Company (Canada) Ltd. • 129 Adelaide Street, West . . . Toronto, Ontario

THE WEMCO LINE OF QUALITY MACHINES FOR PROFITABLE AGGREGATE PROCESSING

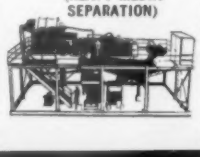
*SAND-PREP WITH EXCLUSIVE LIFTING DEVICE

SAND-SORT

SAND-CLONE

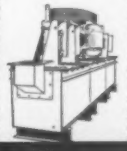
ROCK & SAND JIGS

MOBIL-MILL (HEAVY MEDIA SEPARATION)

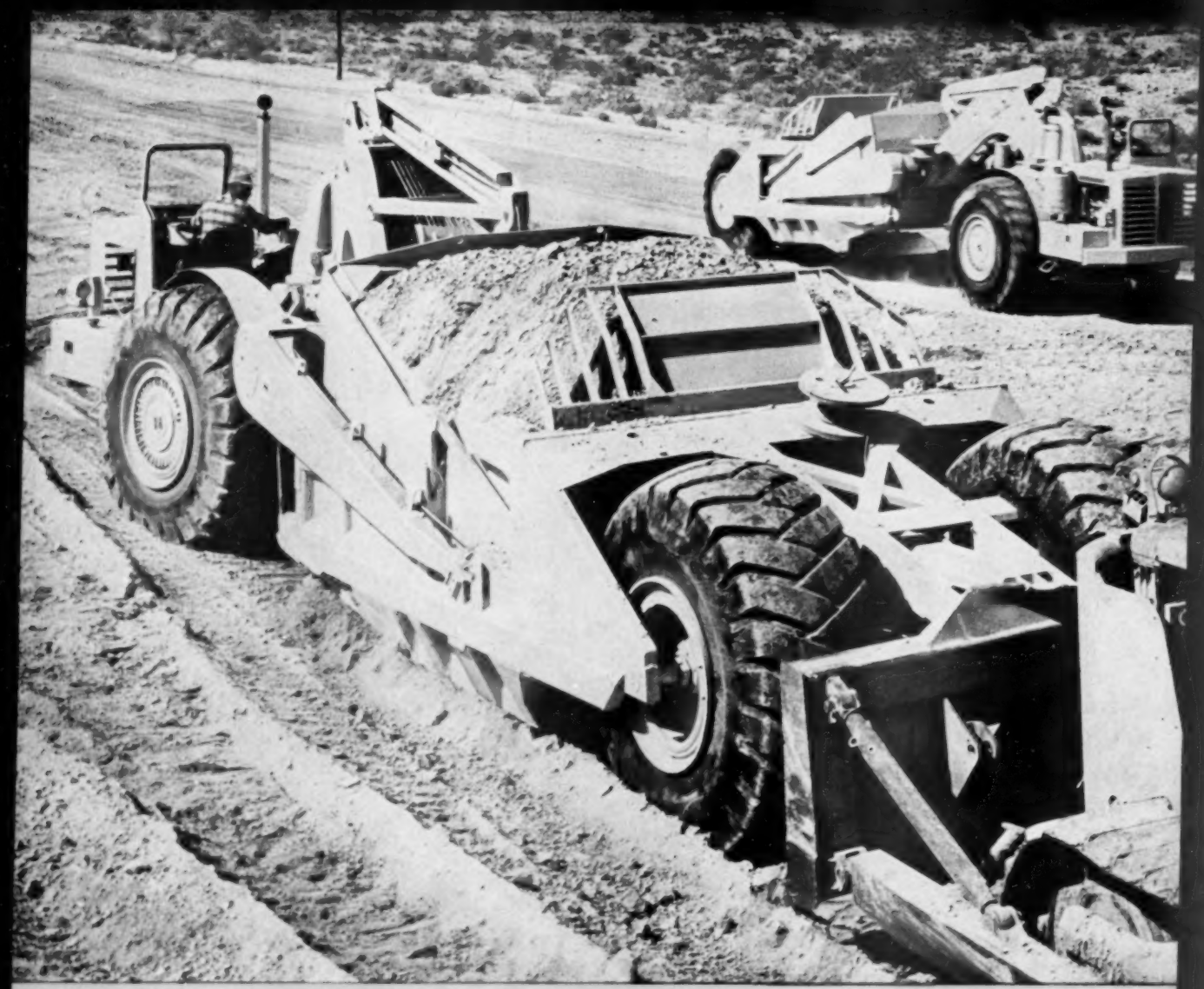


SAND-SIZER

SAND-SCRUBBER



PUMPS



With the planet-powered 230-hp TD-25 pushing—and with 375 high-torque International Diesel hp under the "295's" hood—you heap on 34-cu. yd. with amazing new speed. Even in toughest loading conditions, "X"-member reinforcing maintains perfect Payscraper push-frame alignment!

Note that the Payscraper apron lifts to a big 94-inch opening. Two ejector-plate pushing members apply dozer-like action to force out the whole 34-cu. yd. load cleanly. The 122-inch bowl width speeds unloading, and loading, too—adds control ease and stability, loaded or empty.

How Payscraper* power and power controls boost your dirt-on-fill delivery!

You get highest power-to-payload punch of all rubber-tired rigs in the 34-cu. yd. International 295 Payscraper. The fast-slugging, high-torque 6-cylinder International DT-817 Diesel is the Payscraper power plant.

The direct-start, 375-hp DT-817 is turbocharged to give you all-altitude, high-efficiency performance—power for cycle-speeding rim-pull—plus time-saving "no-lag" control power!

You power-shift the Payscraper, up or down—and the 4-speed planetary-type, torque-converter transmission provides load-speeding *automatic* direct-drive lock-ups in second, third, and fourth gears!

You power-steer the 150,000-lb. loaded Payscraper almost as easily as a 3,600-lb. automobile. Payscraper gives you the big control advantages of (1), exclusive International rack-and-pinion plus tandem pump steering system; and (2), 3-degree forward spindle pitch that improves scraper balance and prevents "nose-downs" in high-speed turns!

You power-control Payscraper dirt-handling actions with fingertip ease with the International PTO-driven Cable Control Unit. One cable drum of this simple planetary system actuates the apron and ejector; the other drum positions the bowl to control loading and spreading! Reach-easy Payscraper power brakes give you fast, positive stopping!

Ease into the bump-smothering Payscraper seat—press the direct-start button—power-shift the outfit into action. Compare the speed of loading, roading, and dumping the 122-inch bowl. See how the advantages of DT-817 Diesel power and complete, positive Payscraper power control can boost your dirt-on-fill delivery. Choose the 2-axle "295," or 3-axle, 34-cu. yd. "495." See your International Construction Equipment Distributor for a demonstration!

Here's your 76-page cost and production estimating book—newest, most authentic and complete guide for estimating material-moving costs—and for selecting equipment combinations for top profits, *anywhere!* Yours for the asking from your International Construction Equipment Distributor!

International® *Construction Equipment*

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE

Positive power-control of all operations adds safety, builds operator confidence — makes him "haul-speed minded" to help you get full capacity and profit from Payscraper speeds up to 33.5 mph. For example, safe, effortless tandem-pump power-steering leaves "the steering feel in the steering wheel"—gives positive, one-hand control!

Even moving a blade-full of shot-rock around the curve, there's no hesitation, no sluing to spill the load. The TD-25's operator has separate speed control of each track to get full-capacity performance, full time. And only the new TD-25 has the power plus of the direct-start, turbocharged DT-817 International engine—that delivers 230 high-torque hp!

HOW POWER-STEERED, POWER-SHIFTED . . . TD-25 takes

—on California mining operation

Even before all the blast dust has settled, this International TD-25 is slamming tons of shot-rock from the benches, so trucks can resume hauling to the processing plant. Then, at this gypsum mine in California, the "25" takes over the "shovel-feeding" chore—dozing full blades of rock upgrade, downgrade, and 'round the curves, to help keep the big dippers swinging full. And in between times, the "25" takes over its third tough project: benching new haul road around mountain slopes!

Three slam-bang rock operations to handle—it's a made-to-order situation for the Planet Power-steered TD-25!

"Dead-track drag" eliminated! You don't brake a track and "half-kill" your pull-power to turn, as you do with king-sized clutch-steered crawlers. With Planet Power-steering you simply change the speed of one TD-25 track—on-the-go, and with 2-finger ease! Around comes the fully-loaded TD-25—with "live" power on both tracks and both tracks pulling. Load-limiting "dead-track drag" is eliminated!

And combined, on-the-go Hi-Lo power-shifting lets you match power to load, instantly—forward or reverse. Just shift one track to high range—the other to low—to do slope-hugging, full-bite benching, or to operate straight ahead with off-center loads!

The "25" is platformed on new 7-roller tracks with double-box-beam frames. The design provides super undercarriage strength for slam-bang conditions—strength to match the full effort of the direct-start, high-torque DT-817 International Diesel engine.

Power-steer and power-shift the TD-25 with king-sized loads. Measure the bonus capacity you get with exclusive Planet Power-steering and Hi-Lo power-shifting. See how this control combination enables you to outearn other big rigs up to 50%. Then measure what it means to get this double-barreled advantage *only* in the TD-25—and as standard equipment *to boot!* Let your International Construction Equipment Distributor demonstrate.

International Harvester Co.
180 North Michigan Ave.
Chicago 1, Illinois

A COMPLETE POWER PACKAGE

International® Construction Equipment

"Boulder-dozing" after blasting— The TD-25 does some "blasting" itself to move "big-as-a-house" hunks of rock aside. Heavy-duty TD-25 Dura-Rollers defy the rock-dozing "grind"—with the industry's thickest shells to prevent flexing—positive grit exclusion—and 1,000-hr.-interval lube capacity!

Here's your 76-page cost and production estimating book—newest, most authentic and complete guide for estimating material-moving costs—and for selecting equipment combinations for top profits, *anywhere!* Yours for the asking from your International Construction Equipment Distributor!

over three slam-bang rock jobs

Dust and Fume Collection by Norblo

helps you achieve efficiency and cleanliness in your plant

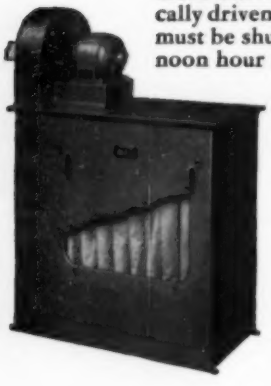
Norblo has developed bag type dust collection systems to a high degree of efficiency.

Norblo Automatic Bag Type

For continuous and heavy duty service at constant capacity and efficiency, Norblo Automatic Bag Type collection pays its own way — in recovery of valuable materials or removal of injurious or "nuisance" industrial air contaminants. Norblo builds the entire installation, from blowers to bag-cleaning mechanisms. Complete systems are engineered to meet specific situations. Norblo engineering insures low maintenance and no shut-downs — guarantees performance of every installation.

Norblo Standard Bag Type Collectors

Based on the same construction principles, the standard bag type collectors provide at low cost the high efficiency service that is obtainable only from bag-type cloth filtering, with either compressed air or electrically driven periodical bag shaking and cleaning. Units must be shut down for cleaning — at such times as the noon hour and end of working day.



Norblo Portable Type

For excellent results in localized dust control, Norblo Portables protect equipment and reduce maintenance in grinding, polishing and cutting departments. Six models cover capacities from 300 to 1350 cfm., at 8″ static pressure at the fan. Occupy small space. Are unusually quiet.

Write for bulletins describing Norblo bag type dust collectors

Northern Blower Division
Buell Engineering Company, Inc.
6409 Barberton Ave., Cleveland 2, Ohio • OLympic 1-1300

buell Norblo

Enter 1258 on Reader Card

PEOPLE IN THE NEWS

(Continued from page 44)

Medusa elects Marshall vice president

ROBERT A. MARSHALL, general sales manager of the Medusa Portland Cement Co., Cleveland Heights, Ohio, was elected vice president-general sales manager at the recent board of directors meeting. Mr. Marshall, who attended Western Reserve University and Harvard Business School, has been with Medusa for seven years. Prior to his association with Medusa Mr. Marshall was with the National City Bank of Cleveland for 19 years. In his new position he will be in charge of sales for all eight plants and eight district sales offices in the United States and Canada.

Ralph Campbell, vice president-commercial, has retired after 26 years of service with Medusa. A graduate mechanical engineer from Iowa State University, he started his career in the cement industry at an early date. For a number of years he was vice president in charge of white cement sales for Medusa and more recently has been in charge of all sales.

Cris Dobbins receives award

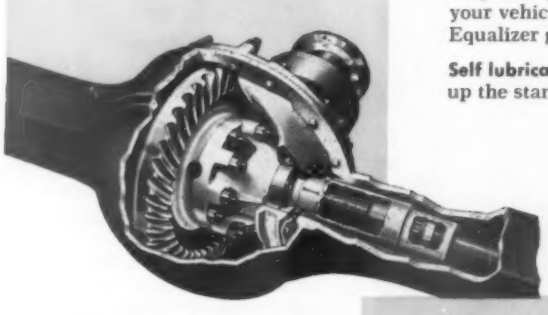
CRIS DOBBINS, president of Ideal Cement Co., Denver, Colo., was presented the distinguished alumni award for 1960 by the University of Denver college of business administration at the recent annual dinner of the Business Administration Alumni Association. Mr. Dobbins, a trustee of the University of Denver, received a bachelor of science degree in commerce from DU in 1927.

END

NEW ROCKWELL TRACTION EQUALIZER...

puts the action where there's traction!

Available with Timken-Detroit® Axles for safer, surer performance... on or off the highway!



Applies driving force to wheels with best traction. The Rockwell Traction Equalizer provides a substantial increase in tractive effort to the wheel with the best road adhesion. It is effective on a vehicle even if one pair of the driving wheels has *no* traction!

Safer, surer operation. A truck equipped with the Rockwell Traction Equalizer is easier to control on curves, slippery pavement and soft ground. The tendency of a vehicle to swerve when one wheel suddenly loses traction is eliminated because wheel spinning is reduced.

Constant actuation. The Rockwell Traction Equalizer doesn't depend on the driver to start it working. It is effective whenever one wheel has the tendency to turn faster than the other.

Tailored for effectiveness. With multi-drive axle vehicles, each axle may be equipped with Traction Equalizer units. No matter where your vehicles operate—on or off the highway—the Rockwell Traction Equalizer gives your vehicles better traction.

Self lubricating. The Rockwell Traction Equalizer automatically picks up the standard axle lubricant and works it through the unit.

Less maintenance. The Rockwell Traction Equalizer normally requires no maintenance between axle overhaul periods. It also cushions heavy impact loads upon tires, shafts and gears.

Another Product of...

ROCKWELL-STANDARD CORPORATION

ROCKWELL R STANDARD®

Transmission and Axle Division, Detroit 32, Michigan

Enter 1249 on Reader Card

FOR RESULTS LIKE THIS ON YOUR NEXT SHOT...

WHICH

There's a lot of easy digging in this low-lying, well shot pile. A minimum of secondary blasting is needed, and there's no towering muck pile to come showering down on your men or equipment. Breakage and displacement like this gets every possible hour of service out of all your equipment.

Effective blasting control doesn't just happen. There is a combination of explosives and blasting methods that is right for every shot. For instance, if the conditions in your quarry lend themselves to the use of AN blasting agents, *new* Atlas Pellets are porous, compact particles that have higher density and sensitivity for more efficient blasting. On the other hand, for some rock formations, high explosives often do a better job—and more economically. In addition, all types of blasting caps, primers, and special packaging methods are available from Atlas . . . each designed for certain conditions and types of work.

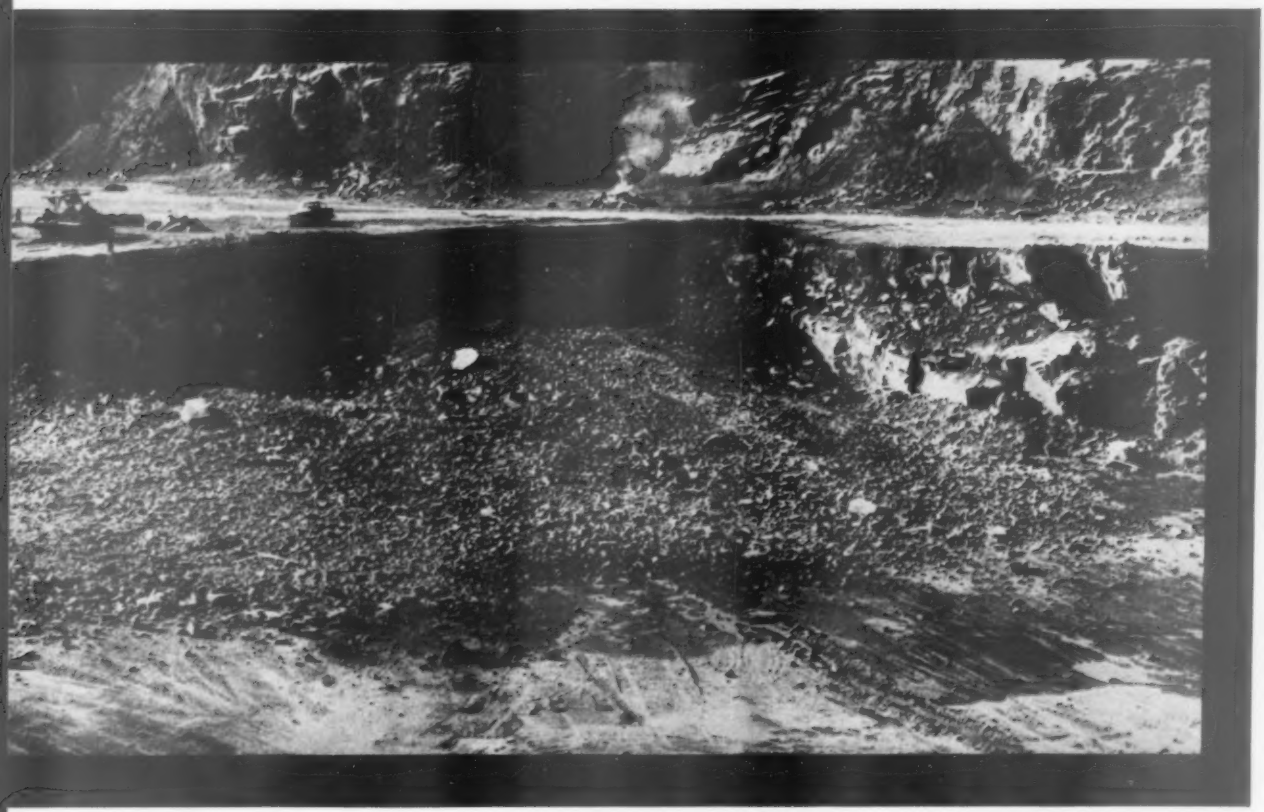
Which Explosive? That's the job of your Atlas Representative. Backed by the complete Atlas line (including all types of ammonium nitrate), his experience with the latest advances in explosives and techniques can help you find the explosives combination and the particular blasting methods that will be most profitable for you on every shot. Our blasting cost chart, slide rules and technical literature are designed to help you determine your lowest true blasting costs. Ask your Atlas Representative about them—or write directly to:

ATLAS POWDER COMPANY
Explosives Division, Wilmington 99, Del.

When you use the right combination,
all your equipment
moves in sooner...
works faster...
produces more.

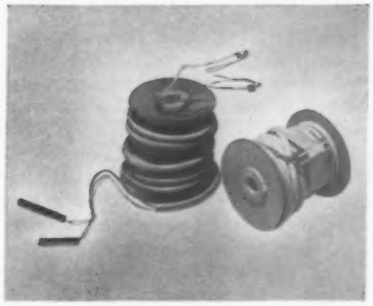
ATLAS PELLETS, a new form of ammonium nitrate, are porous, compact particles that have both the density and sensitivity required for efficient ammonium nitrate blasting.

EXPLOSIVE?



GIANITE, a pre-mixed form of ammonium nitrate, provides the flexibility needed to use ammonium nitrate blasting agents where on-site mixing is difficult or impractical.

GIANT "75" PRIMERS have the wallop required for complete, efficient detonation of both field mixed and plant mixed AN blasting agents, even under severe conditions.



TWINPLEX BLASTING CAPS are two E. B. caps with the leg wires enclosed in a plastic sheath—for detonation at the bottom of deep blast holes, the point of maximum confinement.

ATLAS **ATLAS EXPLOSIVES**

Enter 1234 on Reader Card

INDUSTRY NEWS

Alsatians compare U.S., French gravel plants

PRINCIPAL DIFFERENCES between American and French sand and gravel operations were pointed out by 18 Alsatian businessmen touring eastern and midwestern plants during April. The group, part of whom are pictured returning from an inspection of American Aggregates Corp.'s 20-in. gravel dredge, had this to say: Differences exist mainly in transportation methods used and the extent to which materials are wasted.

They transport most of their material by barge, on either the Seine or Rhine, rather than by truck or rail as in this country. Also, because the demand for aggregates is so far ahead of the supply, they waste practically nothing, finding a market for the poorest grades and for all sizes of gravel. In France, too, particularly in the vicinity of Paris, there is considerably more clay in the material than in the areas on their American tour.

Most of the visitors are members of the Alsatian Association of Materials Producers. They stopped at National Sand and Gravel Association headquarters in Washington, D.C.; Colonial Sand and Stone Co., Long Island, N.Y.; Warner Co., Philadelphia; Material Service Corp., Chicago, and American Aggregates Corp., Detroit.

American Aggregates personnel conducted the visitors out to the gravel dredge and through the processing plant at Green Oak, Mich., answering questions through an interpreter. The Alsatians were especially interested in the 20-in. dredge pump installation, one of three at Green Oak, and in the 300-ton heavy-media-separation process. They seemed surprised that the Green Oak plant was not connected to Detroit by waterway.

Jean Couturier, president of the Alsatian Association, Leon Willer, building engineer of the Ministry of Reconstruction and Extension, and Robert Thierry, chief engineer of roads and bridges, Department of Bas Rhin, were among those on the tour. Acting as their guides for American Aggregates were R. S. Evans, vice president, Larry Clark, Jim Hampton, Jack Salswedell, Paul Kingsley, Jack Warren and Bill Lamar.

Gypsum industry plants cut accidents 16 percent

SIXTY-ONE PLANTS in the gypsum industry reported a 16-percent reduction in the disabling injury frequency rate in 1959, according to Gypsum Association. The 1959 frequency rate dropped to a record low of 3.47 from 1958's previous record rate of 4.13. The reduction was achieved despite an 11-percent increase in total man-hours worked.

The annual safety contest revealed that 24 plants achieved a perfect frequency rate of 0. Only 95 lost-time accidents occurred in the 61 industry plants.

Four trophies were awarded by the association to those plants with the best records in their groups, based on plant production time. They were: the Edgewater, N.J., plant of Barrett Div., Allied Chemical Corp.; Burlington, N.J., plant of National Gypsum Co.; New Brighton, N.Y., plant of U. S. Gypsum Co.; and the East Chicago, Ind., plant of U. S. Gypsum Co. In addition, the Savannah, Ga., plant of National Gypsum won a trophy for showing the greatest improvement in its safety record for the past year—a big 60 percent, as compared with its average over the past three years.

Cement producer purchases ready-mixed concrete firm

LAFARGE CEMENT OF NORTH AMERICA LTD., Vancouver, B. C., has purchased a major interest in Deeks-McBride Ltd. for about $2 million, reports the Financial Post. This gives the cement company a substantial market for its product, as Deeks-McBride is a major ready-mixed concrete and retail outlet. Lafarge, owned by French interests, has produced cement at a plant on Lulu Island for about two years.

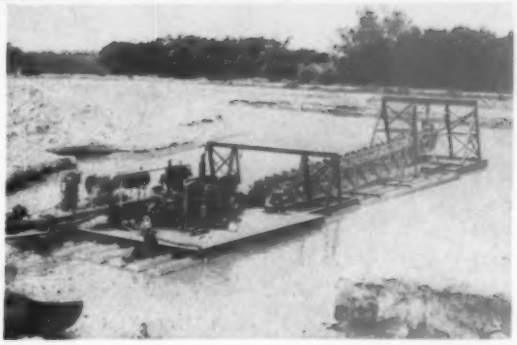
(Continued on page 56)

CENTRAL KANSAS SAND, INC.

SALINA, KAN.,

readily meets state and corps of engineers specs with EAGLE equipment

Another Kansas aggregate producer is readily turning out specification materials with Eagle Equipment—this time it's Central Kansas Sand, Inc. Materials consistently meet state and Corps of Engineers (Shilling Air Force Base) specifications. Eagle equipment consists of a 32′ double water-scalping-classifying tank with automatic bleeder valves and 3-cell collecting-blending flume, a 36″ screw diameter x 18′ coarse material washer handling pea gravel, a 44″ x 32′ single screw fine material washer-classifier-dehydrator processing concrete sand and a 36″ x 25′ single screw unit processing mason sand. Both Eagle screw washers discharge into radial stackers. Ever since Eagle introduced the water scalping-classifying tank in 1947 Kansas producers, like others, have been better able to meet specifications and with maximum economy. Ask for Catalog 58.



EAGLE "SWINTEK" DREDGING LADDER ELIMINATES SHUT-DOWNS FOR CENTRAL KANSAS SAND

An Eagle 75′ long Light-Duty model "Swintek" with 12″ suction boosts production by agitating the deposit, insuring maximum intake of solids. Dredge amply supplies all material plant can handle. While it is no problem here, on Heavy Duty models the traveling chain passes over suction nozzle, acting as a screen to keep out boulders. Cutter bars on the chain carry boulders and stumps up ladder and dump them away from pumping zone. On all models these cutters agitate deposit to increase intake of solids and aid in cutting through clay stratas when encountered. Ask for "Swintek" Catalog 83.

SINCE 1872
EIW
EAGLE IRON WORKS

EAGLE IRON WORKS

ENGINEERS • MANUFACTURERS

133 HOLCOMB AVE., DES MOINES, IOWA

Factory-Trained Distributors *Everywhere*

Enter 1219 on Reader Card

FLYGT IN— WATER OUT

ELECTRIC SUBMERSIBLE PUMPS REVOLUTIONIZE PUMPING METHODS

Construction jobs, utility companies, public works, mining and quarrying . . . all are faced with the danger of too much water at some time. Flygt electric submersible pumps, today's newest and most modern, meet any emergency head on — go right in over their heads to put out up to 3100 GPM; heads to 220 feet. They're easily portable — move from job to job with a minimum of manpower. Flygts can be run day and night with little or no maintenance and no supervision — even run dry for hours without burnout. Get the entire Flygt story for yourself. Send for illustrated brochure covering the complete line, then ask to see a Flygt in action on the job you select.

FLYGT Corporation

57-4

HOOSICK FALLS, N. Y.

WESTERN SALES & SERVICE: STANCO MFGS. & SALES INC., 1666 Ninth St. (Corner of Olympic) Santa Monica, Calif.

PUMP BETTER ELECTRICALLY—USE FLYGT!

Enter 1289 on Reader Card

(Continued from page 54)

Cement plant in India is Kaiser Engineers project

A 100,000-TPY. CEMENT PLANT is being designed and constructed by Kaiser Engineers Overseas Corp. for Mysore Cements Ltd., at Ammasandra, Mysore State, India. It is scheduled for completion by mid-1961.

Included in the project are quarry development, road and rail facilities, raw material storage, cement storage silos, a laboratory, the plant, shop, warehouse and administration building. Project manager is R. W. Fisher, Jr., vice president of Kaiser Engineers Overseas Corp. He will take up residence in Bangalore, India.

Book covers A to Z of American gypsum industry

A VALUABLE REFERENCE WORK on the gypsum and anhydrite industry in the United States and Puerto Rico has been published by the Geological Survey of the Department of the Interior as Bulletin 1105. The authors, Charles F. Withington and Marion C. Jaster, have researched more than 400 references. The gist of each entry is given in the annotated bibliography.

ROCK PRODUCTS appears frequently among the pages of this bibliography, as this magazine has contributed much to the literature, along with other technical publications and geological survey bulletins. References concern the geologic occurrence of gypsum and anhydrite; description of specific deposits; mining, processing and uses of gypsum and anhydrite, and the origin and properties of the calcium sulfate minerals. Annotations are arranged alphabetically by author; and the index is arranged according to geographic area and subject.

Waterproofing contract let by Potash Co. of America

GROUTING OF THE MINE SHAFT of the Potash Co. of America Ltd. plant near Saskatoon, Saskatchewan, Canada, has been contracted to Cementation Co. (Canada) Ltd. Mining operations have been hampered by the flow of water through the shaft.

Grouting is estimated to require a year and to cost approximately $100,000. It will be necessary to suspend all other activities at the mine.

(Continued on page 59)

Enter 1302 on Reader Card

THREE CAT DW21-PR21s *climb 8% grades with 31 tons of clay and limestone*

...and new DW20 and DW21 Series G Tractors have more muscle for even better performance

At Brandon, Miss., Marquette Cement Manufacturing Co. keeps three Cat DW21s with Athey PR21 wagons busy hauling clay and limestone to crushers. They climb 8 per cent grades on the 2000-foot haul with big 31-ton loads.

Good performance, but new Cat DW20 and DW21 Series G Tractors can boost this. With greater rimpull, higher speeds and stronger components, these new tractors with either wagons or new larger scrapers can better their predecessors on just about any job you've got for them to do. Better performance means just one thing . . . more profit for you.

Both the DW20 and DW21 put 345 HP (max. output) to work. There's 12 per cent more rimpull to give you as much as 20 per cent faster travel speeds under similar haul road conditions, compared to former models. Both tractors have stronger final drive gears and improved transmission shifter forks.

See your Caterpillar Dealer for a chance to operate the new DW20 or DW21 Series G with SynchroTouch Transmission Control—the advanced new way to shift gears easier and faster. Your operators just dial the gear for automatic, split-second response. This optional control makes it easy to choose the right gear for maximum efficiency.

Get to see and try these new tractors at your Caterpillar Dealer's soon. Before you do, think of the toughest test you can for them. Then, when the day comes, see if they don't beat your expectations . . . and then some.

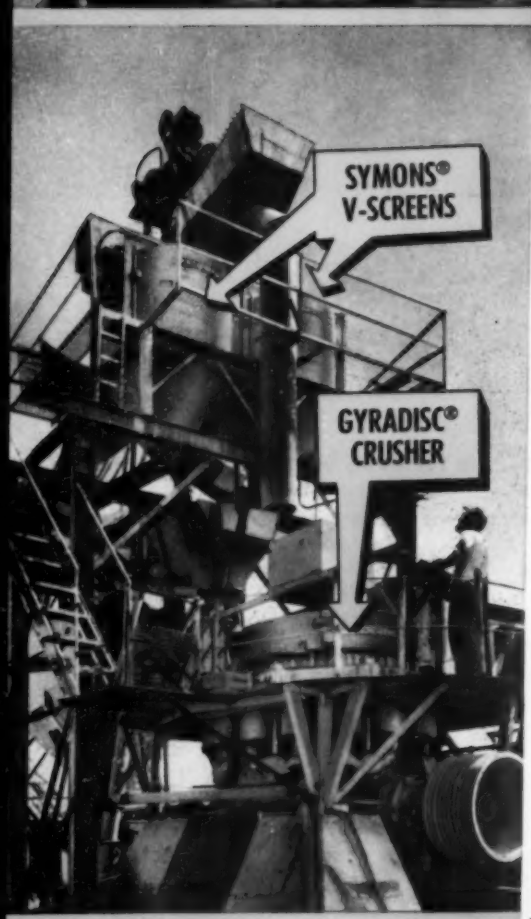
Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BORN OF RESEARCH
PROVED IN THE FIELD

How to profitably MOVE A MOUNTAIN of "unsalable" torpedo gravel



When a mountainous pile of unsalable torpedo gravel threatened to engulf its plant property, Winter Bros. Material Co., Fenton, Missouri, producers of sand and gravel in the St. Louis area relieved their space problem and turned the big liability into a tidy profit. This was accomplished by the installation of a 54-in. Gyradisc Crusher and two Symons V-Screens. The Gyradisc converts ⅜-in. torpedo gravel (pea gravel) into salable, manufactured sand and another premium product, a filter medium, is produced through one of the two Symons V-Screens. The other V-Screen dewaters the torpedo gravel before crushing.

At present, the Gyradisc Crusher and the two Symons V-Screens handle a daily production of up to 500 tpd on intermittent operation.

In many operations, Gyradisc® Crushers supplement Symons® Cone Crushers for volume production of fine specification material. They are used for the production of agricultural limestone, limestone chips, sand, rock dust, crushed stone for asphalt mix and the fine reduction of asbestos, slag, talc, etc.

Write for Bulletin 228.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin

©1960, N. M. CO. Q160

SYMONS . . . A registered Nordberg trademark known throughout the world.

NORDBERG

ATLANTA • CLEVELAND • DALLAS • DULUTH • HOUSTON • KANSAS CITY • MINNEAPOLIS • NEW ORLEANS • NEW YORK • ST. LOUIS
SAN FRANCISCO • TAMPA • WASHINGTON • TORONTO • VANCOUVER • JOHANNESBURG • LONDON • MEXICO, D. F.

(Continued from page 56)

Portland cement production

PRODUCTION OF FINISHED PORTLAND CEMENT in February 1960 totaled 16 million bbl., reports the Bureau of Mines. This was a decrease of four percent from February 1959. Mill shipments for the month were 14.6 million bbl., down one percent from the year-earlier figure.

Stocks of finished portland cement on hand February 29, 1960 comprised 38.7 million bbl., five percent higher than on February 28, 1959. Clinker production was 21.5 million bbl. during February 1960, down 0.3 percent from February 1959. The figures were provided by 148 plants in 37 states and Puerto Rico.

Construction in 40 years to double existing units

IF YOU SHOULD BEGIN to lose faith in U. S. business prospects, here are some facts to revive your optimism. The National Chamber of Commerce reports that the construction industry expects to build the equivalent of an entire new nation before the end of this century.

Every home, office, building, store, school—virtually anything—will be more than duplicated. The cost will be a trillion dollars. Says the Chamber, "Think of the impact of such a boom in a single industry! And try to imagine your own line of business standing still in such an upheaval!"

New England Lime sets record in '59

"WE ARE AGAIN SOLD OUT in the major lines of our business," stockholders of New England Lime Co. were told in the company's annual report by President C. C. Loomis. "We are faced with another expansion program," he continued. "It has been necessary to operate the quarry and crusher with considerable overtime, and during the fall and winter we were forced to operate the quarry at night."

These conditions accounted for the firm's highest sales and profits in its history during 1959. Mr. Loomis said they cap 10 years of plant improvements and expansion. He believes that 1960 should be as good a year as 1959 in sales and profits. The 1959 net earnings were $600,622, an increase of 58.7 percent over 1958.

(Continued on page 62)

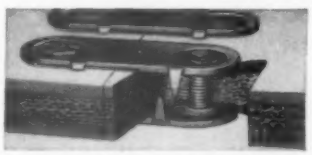
Enter 1292 on Reader Card

BELT INSTALLATION MEN LIKE TO WORK WITH...

FLEXCO®

BELT FASTENERS

Lowell Lynde, Service Engr., Barber-Greene Co. completing the installation of a FLEXCO splice.



Cutaway of a FLEXCO application showing the compression plates, teeth and precision-made bolts and nuts.

He says, "I've spliced most of the belts our Chicago office has sold throughout Illinois and northern Indiana. FLEXCO fasteners have been used on all of them without any trouble. They are easy to install and hold up well regardless of the material conveyed."

PROTECT YOUR INVESTMENT IN CONVEYOR BELTS WITH FLEXCO . . . the quality fastener for all heavy-duty conveyor belt applications: COAL & METALS, SAND & GRAVEL, CRUSHED ROCK, CONSTRUCTION EQUIPMENT, etc.

Available in Steel, Monel, Stainless, Everdur. Also Promal top plates.

FLEXCO "25-PAK"

"25-PAK" contains enough fasteners to join common belt widths.

ORDER FROM YOUR DISTRIBUTOR, OR WRITE TO US FOR BULLETIN F-112.

"FOR THE SPLICE OF A LIFETIME"

Flexible STEEL LACING COMPANY

4684 LEXINGTON STREET • CHICAGO 44, ILLINOIS

Enter 1307 on Reader Card

1 SKOOPER puts lime rock loading on a profitable basis

FLORIDA — Stockpiled lime rock was a real loading problem until this company put a Skooper on the job. A track mounted front end loader was tried first. Production was good but the cost of maintenance was astronomical; crawlers cut out in about six months. A rubber tired front end loader failed to provide adequate production; this machine spun wheels in an effort to get a full bucket. The Skooper rewrote all previous production records, loading out 350 tons of rock per hour. Even at this rate, the Skooper had to wait for truck in many instances.

15-yard truck loaded out every 3 minutes

TEXAS — Loading packed caliche out of stockpile, Skooper heaped 15-yard trucks in about three minutes. That's five yards a minute with an excavator which is basically a ½-yard machine!

400 tons an hour with only 64 horsepower

OHIO — On highway construction, Koehring 205 Skooper was clocked loading loose borrow into trucks. Time studies showed a production rate of 400 tons an hour for the 64 h.p. machine equipped with 2½-yard rehandling bucket!

2 Keeps production high at sand and gravel plant

UTAH — Loading pit-run material at a Utah sand and gravel plant, Skooper's continuous production dig-swing-dump cycles let operator load trucks at top efficiency all day long. No late-afternoon drop-off, common with front-end tractor loaders. Skooper power is concentrated on digging effort, not on traveling.

3 Canadian producer heaps 5-yard trucks in 2 swings

ONTARIO—With contract to supply aggregates to city for street improvements, Canadian sand and gravel company stationed Skooper at stockpile. 5-yard trucks were heaped to capacity, and on their way in just 2 scoops and 2 fast swings of the 2½-yard rehandling bucket! Soon as one truck pulled out, next truck spotted in on opposite side. No waste motion. Skooper just kept swinging from "standstill" position—loaded out to either side with equal ease, speed and efficiency. 7-foot level crowd action, plus high bucket reach, saves unnecessary crawler movement. Nothing like it on wheels or tracks!

4 Steady diet of foundry sand

ILLINOIS — Skooper owner has long-term contract to supply used foundry sand from industrial plant

.....FIELD REPORTS PROVE *there's*

KOEHRING

yard. He sells it to other contractors for use as subgrade material on parking lots, roads, etc. Skooper replaced a tractor front-end loader on this work. Owner reports Skooper not only compares favorably production-wise with the old machine, but maintenance and fuel costs are substantially lower! It's an ideal high-production application for full-revolving, free-swinging Skooper. Plenty of reach for loading the big, high-sided trailers, too! Clearance height under roll-over bucket is 12'-10" at beginning of dump — and more than 10 ft. after dumping.

5 Strips gravel deposit then loads it out

OHIO — Opening new gravel pit, operator teamed a Koehring Skooper with Koehring 8-ton Dumptors — a cost-cutting combination. During initial stripping, big, wide Skooper bucket easily handled large rocks and stump-strewn overburden with no material hang-up during discharge. Then its smooth 7-foot level crowd stripped off remaining overburden fast, clean, in flat, level cuts — exposed underlying gravel deposits with minimum mixing of materials. And the sand and gravel? Skooper loaded that out, too — heaped the 8-ton Dumptor in just a few passes.

Money-saving excavator-crane convertibility

For all its big-bucket versatility, Skooper is by no means a single-purpose tool! Base machine is the job-proved Koehring 205. Entire front end of the Skooper is removed as a complete unit when converting to any one of the alternate attachments: ½-yard shovel, hoe, ½ to ¾-yard clamshell, dragline, 10-ton lift crane. Alert Skooper owners are cashing in on this extra time and money-saving advantage. Saves buying or renting additional equipment.

Mail now to:
KOEHRING DIVISION,
3026 W. Concordia, Milwaukee 16, Wis.

Send new Skooper catalog right away.

NAME_____

TITLE_____

COMPANY_____

DIVISION_____

STREET_____

CITY, STATE_____

Digging, stripping, loading, rehandling — Koehring® Skooper has proved itself on one job after another — from coast to coast, and overseas, too. Isn't it about time you checked what it will do for you? Better call Koehring distributor, or write us today.

KOEHRING
DIVISION OF KOEHRING COMPANY
Milwaukee 16, Wisconsin

nothing like it — on wheels or tracks!

SKOOPER

KOEHRING HEAVY DUTY

Here's where to get your best buys in used equipment!

Sponce Long,
Used Equipment Manager,
Hoover Equipment Company,
Caterpillar Dealer
In Oklahoma City.

"This is a section of our used equipment lot—one of over 300 Caterpillar Dealers' lots in the U. S. Right here, as in any of the others, you can find the used machine you want for the purpose you want at a fair, realistic price. What's more, you don't buy 'blind.' We recondition, classify, label and *guarantee* our trade-ins. *We* know what you're buying... *you* know what you're buying.

"To help you get what you want, we classify most all of our used equipment into three types of *protected* buys, one of which should be right for your needs. Here they are:

1 A 'BONDED BUY' Cat-built machine, with a warranted value up to $10,000—it guarantees satisfactory equipment performance and supplies free of charge *all* parts and labor on the machine during the guarantee period.

2 A 'CERTIFIED BUY'—a written guarantee covering units of any make in very good condition.

3 A 'BUY AND TRY' deal—a written money-back agreement on certain machines not in the above two classifications.

"Regardless of the type or kind of equipment you buy, we want it to earn money and pay off for you with satisfactory performance. We back every machine with prompt service and parts you can trust. Believe me, all Caterpillar Dealers do. Every Caterpillar Dealer offers the best buys in used equipment. You'll find him listed in the Yellow Pages!"

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BEST USED EQUIPMENT BUYS ANYWHERE

Enter 1293 on Reader Card

INDUSTRY NEWS

(Continued from page 59)

Phosphates seminar

A SEMINAR EXPLAINING phosphates processing to salesmen was held recently at Lakeland, Fla., by American Cyanamid Co. The program was intended to provide information needed by the company's Agricultural Division sales representatives, and involved technical discussions on the fertilizer industry and future trends in phosphate marketing.

Methods of processing phosphate rock, triple superphosphate and phosphoric acid were presented to the group by John C. Bennett, manager of the phosphates and nitrogen department, with the aid of personnel from Cyanamid's phosphate operation in Florida.

The group toured Cyanamid's holdings at Orange Park and Brewster to observe mining and production processes; it also visited the new phosphates museum at Bartow, which is sponsored by the phosphate industry in Florida.

New ASTM standards in 1959 Supplements

CURRENT SUPPLEMENTS to the Book of Standards of American Society for Testing Materials have been published. In 10 parts, they contain the latest standard specifications, tests, definitions and recommended practices. Part 4 is of special interest to readers of ROCK PRODUCTS. Here are standards for cement, lime, gypsum, chemical-resistant mortars, aggregates, concrete, curing materials, bituminous materials, waterproofing materials and soils.

Available from ASTM, 1916 Race St., Philadelphia 3, Pa., the complete set of 1959 Supplements is $40; parts are $4 each.

Corsons measure '59 gains

NET SALES WERE UP 10.7 PERCENT in 1959 over 1958, G. & W. H. Corson, Inc., informed shareholders. The Plymouth Meeting, Pa., lime producers had net income of $618,272 in 1959, compared with $580,537 in 1958.

Corson officials reported that Flintkote Co. is about ready to go into production at Dolomite, Utah, using the Corson-patented lime hydration process. It will be the 10th plant operating under Corson patents. An 11th plant will be built in Australia and other plants are being designed.

(Continued on page 68)

Over 15 ft. per hr. through solid granite

with Stardrill-Keystone KF-50 rotary gun drill

This production — reported by B&R Diamond Drilling Co., of El Cajon, California — shows again why more Stardrill-Keystone rotary drills are sold for the tough jobs. On the KF-50 application pictured, operator used tricone rotary rock bit to drill down to solid rock, then switched to down-the-hole air hammer to sink 15 ft. per min. through solid blue granite. Water-cooled piston compressor lifted cuttings thru water from 300 ft.

Handles scattered mine, quarry work

Heavy duty in every respect, the KF-50 mounts a Cummins diesel engine, a 500 CFM two-stage compressor, a 158 gpm duplex piston mud pump, and has retractable rotary table. Variable-speed pull down, with infinite feed adjustment from 0 to 20 ft. per min., insures maximum permissible hole production in any type formation. Bit pressures to 30,000 lbs. are obtainable. Depending on your needs, mud pump can be omitted, with larger-capacity compressor available.

Get the complete story on the truck-mounted KF-50. You'll find it "has what it takes" to cut your costs on blast hole drilling, sampling, and exploratory work. Get in touch with your Stardrill-Keystone distributor, or write for complete specs.

Stardrill-Keystone offers a wide range of rotary, down-the-hole, and combination drills, tools and attachments for mining and quarry applications. Your Stardrill-Keystone representative is available to make specific recommendations for your particular problem without obligation.

STARDRILL-KEYSTONE

BUFFALO-SPRINGFIELD • *Division of Koehring Company*

SPRINGFIELD, OHIO

SK14

Enter 1209 on Reader Card

REALLY SHARP ON TURNS

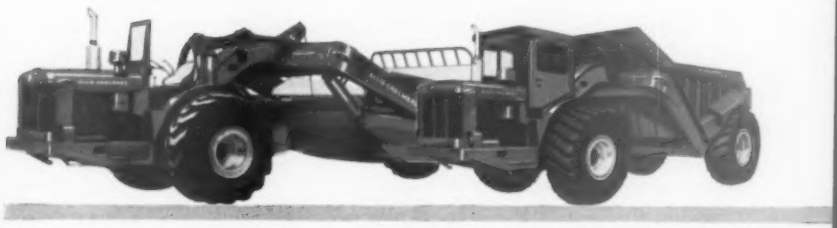
The all-hydraulic, 20-ton capacity TR-260 makes U turns in less than 26½ ft... saves up to 15 seconds per cycle over conventional haulers.

The 230-hp Allis-Chalmers TR-260 turns in less space than any wagon of comparable size. Complete U turns are made in less than 26½ ft. All-hydraulic, 2-stage steering with double-acting steering jacks gives you 2-way power pulling out of full turns. At the shovel and hopper, this kind of turning can save you up to 15 seconds per cycle over conventional haulers.

In addition, the sharp-turning TR-260 also gives you the benefits of KON-TORK *differential* and *plenty of tractor and wagon underclearance* to keep you on-the-go.

These are just a few reasons why the 20-ton capacity TR-260 brings you extra profits on your hauling jobs. Your Allis-Chalmers dealer will give you all the facts on both the TR-260 and the 12-ton capacity TR-160. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

You get double value and lower basic equipment investment when you use the 9.5-cu-yd TS-160 and 17-cu-yd TS-260, the 12-ton TR-160 and 20-ton TR-260 units. Both can be interchanged... together they eliminate need for specialized equipment.



KON-TORK is an Allis-Chalmers trademark.

move ahead with

ALLIS-CHALMERS

...power for a growing world

Maneuverability for quick spotting at crusher and under shovel is essential to maintain fast cycle time. Drivers say these big units handle almost as easily as their own cars—particularly like positive brake control on loaded downhill runs.

Talk about efficiency

...four replace nine

Big tonnage operations like those of Consumers Company, McCook, Ill., division of Vulcan Materials, Inc., depend on modern, efficient equipment to keep operating costs low. In the quarry, fast-action electric shovels pick up 5½-yard bites of shot rock. Four Mack LYSW end-dumpers, working two to a shovel, hustle forty-ton loads three-quarters of a mile to the crusher . . . a total of 288 trips each day. Before Vulcan put the four big Macks on the job, there were actually nine smaller competitive models working under the shovels.

Outstanding performance characteristics enable Macks to contribute to successful quarry and mining operations throughout the world. Plenty of power for fast getaways under full loads. Massive, self-equalizing, air-over-hydraulic brakes and easy, positive power steering for safe, fast maneuverability at shovel and crusher. Traditional Mack construction throughout to reduce downtime and maintenance.

These are sound reasons why Macks are first choice where profitable operations rely on truck performance . . . because they mean that when you purchase a Mack, you get a truck which will outwork and outlive anything in its class—that will pay for itself again and again by delivering top work capability per dollar invested. Your nearby Mack branch or distributor will be very glad to give you full details on the Mack best suited to your operation. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

MACK FIRST NAME FOR **TRUCKS**

Fast, modern electric shovels have to hustle when Mack 40-tonners like these gang up on them. For non-stop production, Vulcan assigns two Macks to each shovel. Exceptional speed and ease of handling are characteristics praised by drivers.

Big trucks are the profit makers in quarry operations. LYSW Macks like these easily handle 40-ton loads—hustle 72 trips a day from quarry to crusher—require only routine service and downtime.

(Continued from page 62)

Ideal subsidiary builds new aggregate plant

GREAT WESTERN AGGREGATES, INC., subsidiary of Ideal Cement Co., Denver, Colo., began construction during May of a lightweight aggregate plant. The facility, near Denver, will have an annual capacity of 300,000 cu. yd. of "Idealite" expanded shale aggregate. Provision is being made to double capacity quickly and economically when needed.

The plant site at Rocky Flats was selected because it is immediately adjacent to the source of raw materials. There are reserves for more than 100 years' production.

Major features of the plant will be a 12 x 240-ft. rotary kiln, a 9½ x 150-ft. rotary cooler, a 200-tph. crushing plant and four storage silos, 40 ft. diam. x 135 ft. high. Total capacity of the silos will be 18,000 cu. yd. of aggregate. There also will be five 1,000-ton raw storage bins.

All equipment except the crushing plant will be controlled from the kiln firing platform. Dust collecting equipment will be installed at key points to assure cleanliness of operation.

This will be GWA's second plant. Its first, at Laramie, Wyo., has an annual capacity of 230,000 tons.

More truth than poetry in this bit of advice

A RECENT ISSUE of Inland and American Printer and Lithographer reprinted a poem (author unknown) that offers good advice to reporters and contributors. "Boil it down" is a notion that is endorsed by editors everywhere. We pass it on to ROCK PRODUCTS readers as an expression of our intention to provide concise, readable copy:

If you've got a thought that's happy
—Boil it down.
Make it short and crisp and snappy
—Boil it down.
When your brain its coin has minted,
Down the page your pen has sprinted,
If you want your effort printed, Boil it down.
Take out every surplus letter—Boil it down.
Fewer syllables the better—Boil it down.
Make your meaning plain—express it,
So we'll know—not merely guess it,
Then, my friend, ere you address it,
Boil it down.
Skim it well, then skim the skimmings—Boil it down.
When you're sure it would be a sin to
Cut another sentence in two,
Send it in, and we'll begin to—Boil it down.

Western Gypsum Products opens Vancouver plant

This is the automatic calcining kettle controlled by a temperature recorder and pre-set timing devices. Inspecting it are Ken French, plant manager, and Otto Bernshine, kettleman

AN INDUSTRY FIRST is claimed by Western Gypsum Products Ltd. at its new plant in Vancouver: a company-developed, gas-fired kettle equipped with automatic timing and heat-control devices. The $2.5-million plant, opened officially April 22, has several other features, including a $75,000 electrostatic precipitator and a completely automatic, six-deck dryer. The latter can handle enough gypsum board in one day to complete 50 houses.

On hand for opening day ceremonies were Hon. Frank M. Ross, lieutenant governor of British Columbia, Sir Graham Hayman of London, chairman of the board of British Plaster Board (Holdings) Ltd., and R. S. Jukes, managing director. They were welcomed by Sen. G. S. Thorvaldson of Winnipeg.

A quarry near Lake Windermere in the interior of British Columbia supplies gypsum for the Vancouver plant. It was acquired in 1957 through the purchase of assets of Columbia Gypsum Co. At the same time, Western Gypsum purchased Westroc Industries Ltd., a Vancouver insulation-materials manufacturer. The latter has marketed products from Western Gypsum's Calgary plant in the Vancouver area until the Vancouver plant could be erected.

Lehigh's president shades optimism

JOSEPH S. YOUNG, president of Lehigh Portland Cement Co., Philadelphia, Pa., was slightly less optimistic about 1960 prospects at the end of the first quarter than he was at the beginning of the year. "The industry outlook now is for somewhat less cement consumption in 1960 than in 1959," he said. "In our own case, we believe that for the entire year shipments will at least approximate those of last year."

Modest price increases became effective at six plants January 1. These, coupled with continued improvements in production efficiency, should tend to offset in part higher payroll costs that went into effect May 1 under a two-year labor contract.

Pavement yardage

CONCRETE PAVEMENT for the month of March and the first three months of 1960 has been classified by Portland Cement Association as follows:

	Sq. yd. awarded during: March	1st 3 mos.
Roads	5,366,575	14,427,192
Streets and alleys	2,144,613	5,062,896
Airports	414,793	1,707,186
Totals	7,825,981	21,197,274

(Continued on page 71)

"ReoMatics save 6½¢ per mile for Arizona Sand & Rock," reports Ralph Greer, Equipment Superintendent.

On a fleet-wide basis with each unit averaging 20,000 miles per year, Arizona Sand & Rock pares its operating costs by **6½¢ per mile through the use of automatics over straight sticks**. ASR's Reo dumps and mixers are equipped with **Reo Gold Comet Engines and ReoMatic transmissions**. Prime reason for ASR's standardization on automatics is to relieve costly shock load damage to drive lines and speed up delivery service to customers.

REO DIVISION, The White Motor Company, Lansing, Michigan.

Gold Standard of Values

REO LIFETIME POWER

Every Engine in the Line Wet Sleeve Constructed

The engine is the heart of the truck, and no truck can be better than its engine. Horsepower, type of fuel, ease and cost of maintenance, performing ability and suitability are important factors to every trucker's profits.

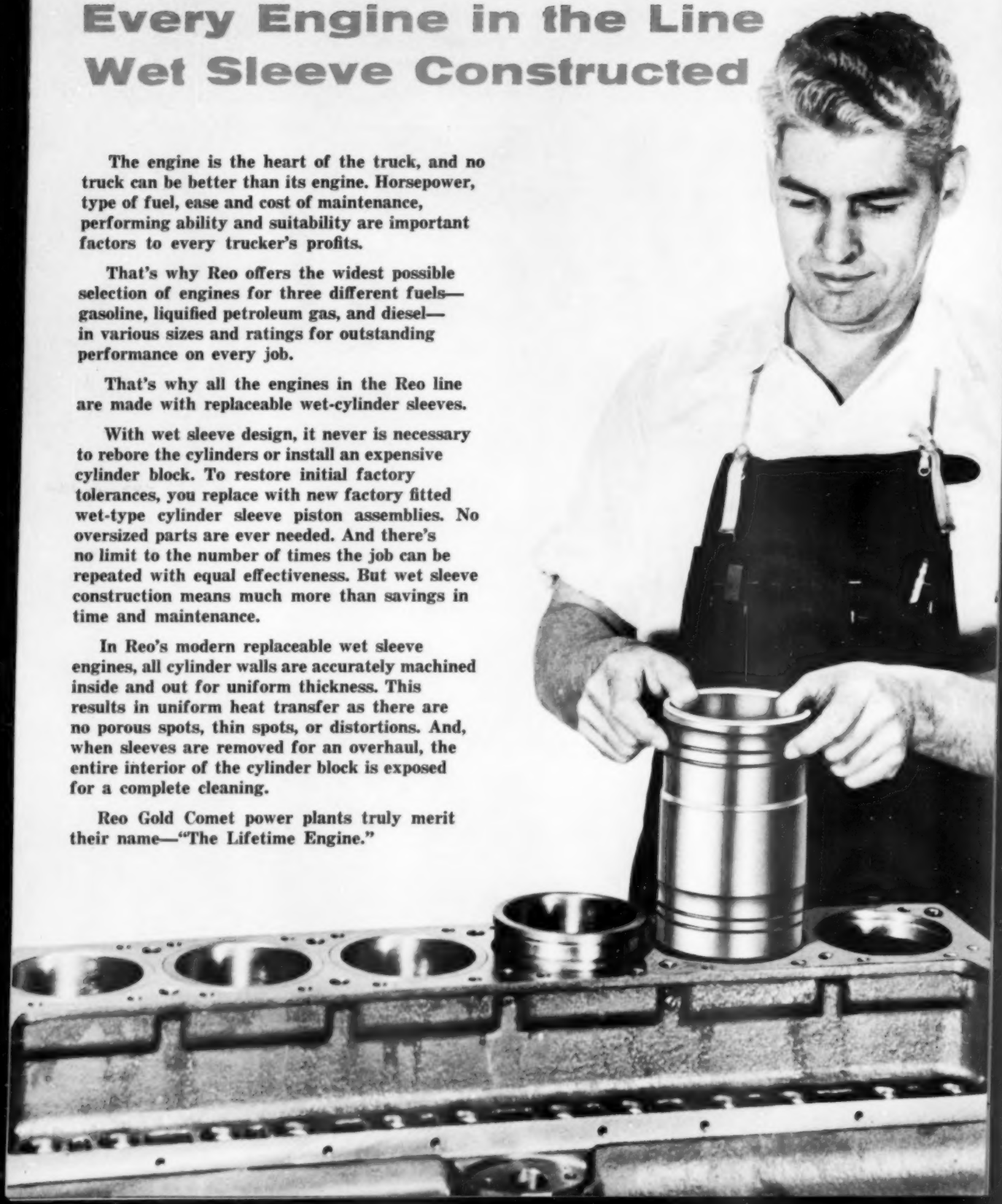
That's why Reo offers the widest possible selection of engines for three different fuels—gasoline, liquified petroleum gas, and diesel—in various sizes and ratings for outstanding performance on every job.

That's why all the engines in the Reo line are made with replaceable wet-cylinder sleeves.

With wet sleeve design, it never is necessary to rebore the cylinders or install an expensive cylinder block. To restore initial factory tolerances, you replace with new factory fitted wet-type cylinder sleeve piston assemblies. No oversized parts are ever needed. And there's no limit to the number of times the job can be repeated with equal effectiveness. But wet sleeve construction means much more than savings in time and maintenance.

In Reo's modern replaceable wet sleeve engines, all cylinder walls are accurately machined inside and out for uniform thickness. This results in uniform heat transfer as there are no porous spots, thin spots, or distortions. And, when sleeves are removed for an overhaul, the entire interior of the cylinder block is exposed for a complete cleaning.

Reo Gold Comet power plants truly merit their name—"The Lifetime Engine."



(Continued from page 68)

BPR forecasts highway uses and related data

CRUSHED STONE PRODUCERS and others interested in long-range highway planning will find a report by the Office of Research, Bureau of Public Roads, very valuable. Written by Thomas R. Todd and published by Public Roads in Vol. 30, No. 12, it forecasts population, motor-vehicle registrations, travel and fuel consumption to the year 1976.

National Crushed Stone Association has distributed copies of the article to members and says that a limited number of additional copies are available upon request. The forecasts have been prepared for the BPR Highway Cost Allocation Study and are based on recent trends.

Here are some conclusions: There will be 230 million people living in the United States in 1976. They will register 114 million motor vehicles which will travel 1.2 billion vehicle miles. These estimates are based on a 37-percent increase in population over 1956, and increases of 75 percent in motor-vehicle registrations and 93 percent in travel are expected.

Cement engineers move

W. R. BENDY CEMENT ENGINEERS have moved to a new address. Since the middle of March, the company has occupied its new building at 1530 Page Industrial Blvd., St. Louis 32, Missouri.

Minnesota group supports aglime studies at U. of M.

New officers of Minnesota Agricultural Limestone Producers Association are, from left: Don Stussy, Stussy Construction Co., Mantorville, reelected president; Clarence Nielson, Hector Construction Co., Caledonia, vice president; Dean Gaulke, Patterson Quarries, Inc., St. Charles, reelected secretary-treasurer; John Patterson, Patterson Quarries, Inc., director, and Leland Osmundson, Osmundson Brothers, Adams, director. Arthur Bustad, of Martin Bustad, Austin, director, was not present

MINNESOTA AGRICULTURAL LIMESTONE PRODUCERS ASSOCIATION, meeting in Minneapolis, adopted a new set of by-laws, voted to increase membership dues and agreed to continue the support of experiments with agricultural limestone at the University of Minnesota.

Samuel M. Omasta of Washington, D.C., vice president of National Limestone Institute, Inc., reviewed NLI's surveys and other activities concerning the government's Agricultural Conservation Program.

Other speakers at the two-day meeting of the Minnesota aglime producers were representatives of the U. of M. and of the State Agricultural Stabilization and Conservation Committee. They included Merle Avery, ASC program specialist; Dr. W. P. Martin, head of the Department of Soils, U. of M., and Dr. A. C. Caldwell and Dr. John Grava, professors in the same department. New experiments in aglime were described, the place of aglime and calcium in counteracting the effect of atomic fallout was outlined, and new information was submitted on the testing and quality of aglime in Minnesota.

(Continued on page 73)

Another PLUS value...

Stops
HOLDUPS
in your production

Want continuous production...to cut installation costs? Investigate the advantages of Rex Segmental Rim Sprockets and Traction Wheels. Tough, long-lasting special cast steel rims bolt simply to either split or solid hub body. When, after long service life, replacement is required, all you do is replace the worn rim...the hub body remains on the shaft. See your Rex Distributor or mail the coupon.

REX®
SPROCKETS AND WHEELS

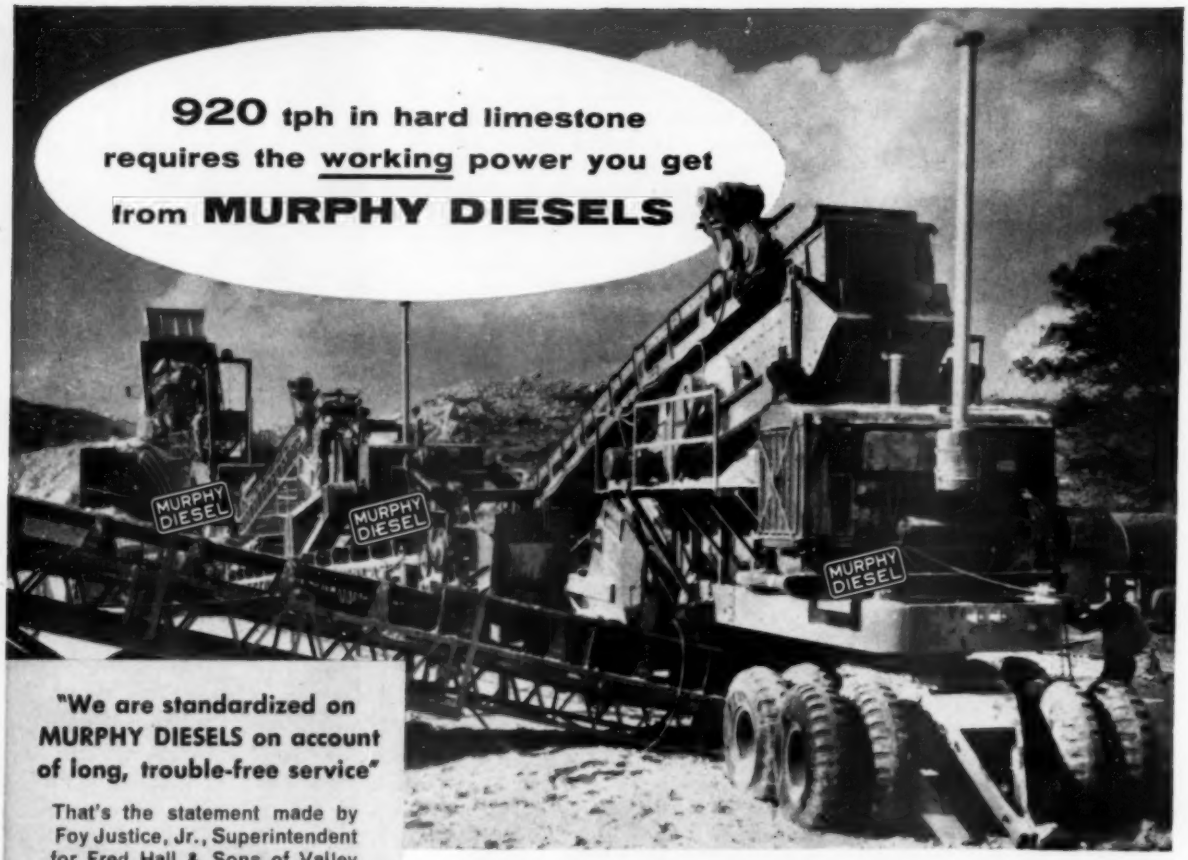
CHAIN Belt Company 110
4649 W. Greenfield Ave.
Milwaukee 1, Wis.
(In Canada: CHAIN Belt (Canada) Ltd., 1181 Sheppard Ave. East, Toronto)

☐ Send me my copy of Bulletin 55-55.
☐ Have a Rex man call.

Name.....
Company.....
Address.....
City.....Zone.....State.....

Enter 1305 on Reader Card

Enter 1294 on Reader Card



"We are standardized on MURPHY DIESELS on account of long, trouble-free service"

That's the statement made by Foy Justice, Jr., Superintendent for Fred Hall & Sons of Valley Mills, Texas. And Mr. Justice has had plenty of experience with the performance of Murphy Diesels . . . they have 13 Murphys powering their Pioneer crushing plants and Northwest shovels to put more power into the job. On the job shown above, power for the crushing units is furnished by two 225 HP (continuous) Murphys, a 177 HP (continuous) Murphy, and a 150 KW Murphy Diesel Generator Set. They are producing crushed limestone for rebuilding U. S. 190 between Belton and Kileen, Texas.

Production of 800 to over 900 tons of hard Edwards limestone per hour is no accident! It is good management on the part of Texas contractor Fred Hall & Sons in selecting the right crushing plants *and putting Murphy Diesel Power into the job.* These are the engines that give you the kind of usable, hard-working power needed for crushing.

Murphy Diesels provide good lugging power because of high rising torque to help keep your equipment running at the right operating speed for efficient production and more profit. They give you steady production shift after shift with lowest engine maintenance costs, plus the economy and dependability of "true diesel" operation. Your Murphy Diesel Dealer has the facts. See him today.

MURPHY DIESEL

428-RO

PUTS MORE POWER INTO THE JOB

MP Series Murphy Diesel engines and power units are available in sizes from 105 to 320 HP with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 60 to 188 KW.

MURPHY DIESEL COMPANY

5315 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

Throughout the Nation

Enter 1233 on Reader Card

(Continued from page 71)

New towboat can push twenty loaded barges

CORNELL STEAMBOAT CO., subsidiary of New York Trap Rock Corp., West Nyack, N.Y., entered a new vessel in service in mid-April. It is the first push-type diesel towboat specifically designed for modern Hudson River requirements, according to its builders, Dravo Corp.

The new towboat, named Rockland County, pushes barge tows of crushed stone from Trap Rock's five quarries on the Hudson to lower New York harbor. Powered by two Fairbanks-Morse engines with a combined 1,800 shaft hp., the boat is 105 ft. long, 30 ft. wide and 11 ft. 9 in. deep. It can push 20 loaded barges, thanks to twin propellers encased in welded steel Kort nozzles. For each propeller, there are three rudders. The nozzles provide maximum flow of water to the propellers with controlled thrust action, thereby increasing the boat's push power approximately 25 percent at operating speeds.

Minnesota M&M to push erection of Belle Mead plant

TWO FAVORABLE ZONING DECISIONS by the Supreme Court of New Jersey have given Minnesota Mining and Manufacturing Co. the green light on construction of a roofing granules plant at Belle Mead, N.J. Delayed several years because of litigation on local zoning laws, the plant construction will be started this year and rushed to completion in 1961.

MICA-Clute contract signals start of production

COMPLETION OF THE SHAKEDOWN period for the mica mill in Cordova, N.M., of MICA (Mineral Industrial Commodities of America) has been announced. Under a management contract agreement with MICA, the Clute Corp., Denver, Colo., is developing production of mica products from the 350-acre claim.

Henry J. Long has been appointed general manager of the facility, according to John H. Lowell, president of Clute Corp. The latter company has a 15-percent interest in the MICA holdings and facilities.

The Clute mill that has been installed at the mine site has a 300-tpd. capacity. This is an air-separation unit new to the mica industry which works by the method of negative air pressures patented by Clute. Mica is lifted out of the crushed ore, rather than extracted by the water flotation process. Besides supervising operations of the mill at Cordova, Mr. Long will be in charge of the company's fine grinding plant near Pojaque, N.M.

Brighter skies over Mason City

AN ARTICLE TITLED "Brighter Skies" ran in the March 1960 issue of Run of the Mill, house organ of Northwestern States Portland Cement Co. Its author was Hanford MacNider, president of the company. He wrote of the installation of glass-bag dust collectors at the plant in Mason City, Iowa, by the plant's own operating force. The reaction of the townspeople to the "brighter skies" over Mason City was, at first, a curious mixture of surprise and alarm. To quote:

"A wave of color swept across our downtown switchboard, and the bases of our plant telephones lit up like pinball machines in action . . . The phone calls were all anxious questions along the same line—'Why are you shut down? What is the matter at the plant? Will many of your operating force be out of work?'

"The white plume which had crowned our operations had disappeared and even our most critical neighbors were unhappy and dismayed by its absence, and suddenly anxious about our welfare."

Name change for Inland

INLAND SAND & GRAVEL CO., 7620 Madison St., Derby, Colo., has changed its name. According to Fred Krichbaum, vice president-general manager, the new name is Boise Cascade Sand & Gravel Co.

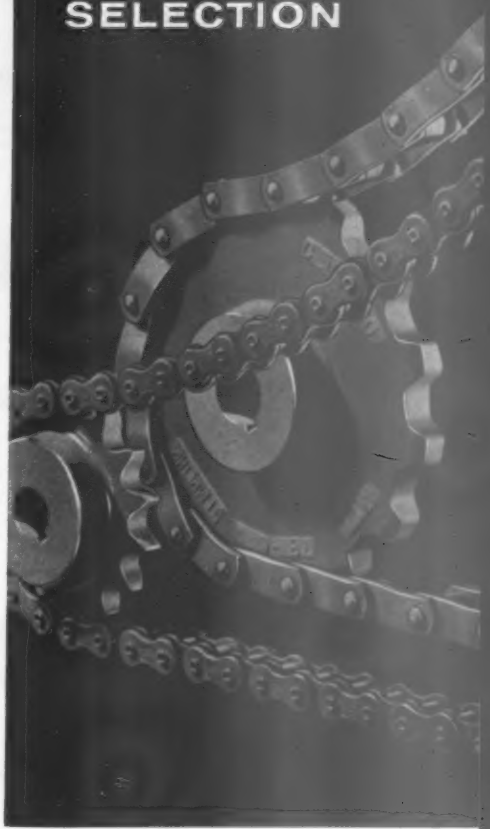
National Gypsum goes West by acquiring Union Gypsum

NATIONAL GYPSUM CO., Buffalo, N.Y., is expanding operations onto the West Coast through the acquisition of Union Gypsum Co., Phoenix, Ariz. The latter has markets in California, New Mexico, Texas and Arizona. The contract called for an exchange of 76,904 shares of National Gypsum's common stock for all of the shares of Union outstanding.

(Continued on page 75)

Another PLUS value...

SIMPLIFY
DRIVE
SELECTION



Here's how to save time and money in your chain drive selection. Rex Stock Chain Drives, ranging from ½ to 100 h.p....driver sprocket r.p.m. of from 5 to 2000...offer you your most economical selection. They cover both Rex Roller Chains and Rex Chabelco Steel Chains with necessary sprocket selections. To save you time in selection, the Rex Stock Drive Selection Bulletin shows you how to select the right drive in 4 easy steps. For your copy, see your Rex Distributor or mail the coupon.

REX®
STOCK CHAIN DRIVES

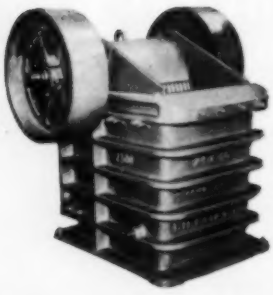
CHAIN Belt Company 409
4649 W. Greenfield Ave.
Milwaukee 1, Wis.
(In Canada: CHAIN Belt (Canada) Ltd., 1181 Sheppard Ave. East, Toronto, Ontario.)

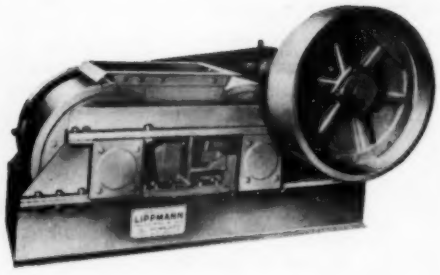
☐ Send me Rex Stock Drive Bulletin 581.
☐ Have a Rex Man call.

Name.....
Company.....
Address.....
City.....Zone....State.....

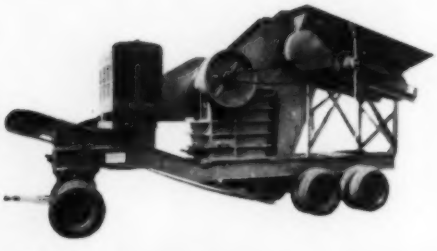
Enter 1291 on Reader Card

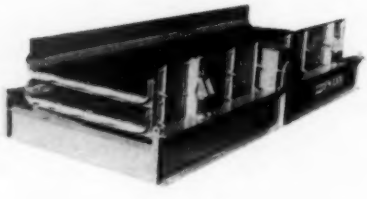
This year, U. S. producers will install a record-breaking





470 jaw crushers...800 gyratory crushers...150 roll crushers...





110 portable crushing plants...3500 screens...6700 conveyors...

(Above figures per Rock Products estimate)

Will you keep pace with this step-up in plant efficiency? You'll find it pays to modernize with **LIPPMANN**

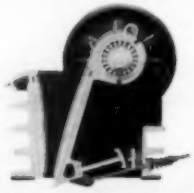
ENGINEERING WORKS, INC.
MILWAUKEE 14, WISCONSIN

jaw, roll and gyratory crushers • impactors • pulverizers • conveyors • vibrating screens • apron feeders • portable crushing and washing plants

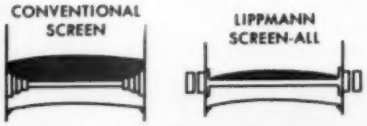
F-M-11-60

TYPICAL EXAMPLES HOW YOU CAN INCREASE PROFITS WITH LIPPMANN

100% more stockpile capacity:
Exclusive "wrap drive" on Lippmann portable conveyors places *entire* drive mechanism at conveyor's *low-end*. Resulting weight concentration lets you use 25 to 33% shorter wheelbase without loss of stability... in turn doubles volume you can stockpile without re-positioning.



41% higher crusher output:
According to published data you can check, Lippmann Grizzly-King jaw crushers give you up to 41% more rated output, size for size, than average of competitive makes. Reasons: up to 37% deeper jaw dies, 16% greater eccentric throw, extra-heavy-duty frame design.



Space-saving screen design:
Exclusive Lippmann design positions bearings just 7/8" apart and outside of screen body... reduces shaft bending moment to practically zero and saves up to 8" of head room between decks. Means greater all-around screening efficiency and longer service.

Enter 1266 on Reader Card

(Continued from page 73)

Gypsum Association has customers' service project

THE GYPSUM ASSOCIATION, working with its member companies and others, is developing new approaches to loading and unloading problems. Its Materials Handling Committee has launched a campaign in the interest of building materials dealers that is directed at reducing safety hazards and eliminating unnecessary costs.

Cooperation of dealers has been sought by the association in cleaning railroad cars of dunnage and disposing of it properly. Lloyd H. Yeager, secretary and general manager of the association, warned them that failure to remove and dispose of dunnage at the point of destination might force railroads to impose drastic regulations. Such action would nullify the savings found in the unit loading system, a method pioneered by the gypsum industry to capitalize on the growing use of mechanical unloading equipment.

Another helpful suggestion from the association to dealers concerns the use of dividing wedges. These wedges, inserted under several bundles of gypsum wallboard, permit the forks of a lift truck to remove them from a rail boxcar or flatcar. Dunnage disposal is sharply reduced.

Atlas Light Aggregate adds 2nd rotary kiln

ATLAS LIGHT AGGREGATE LTD., St. Boniface, Manitoba, is installing a 160-ft. rotary kiln that will produce 400 cu. yd. per day and double plant capacity. There has been a ⅓ greater demand for the company's output during the past year which prompted the expansion. Atlas Light Aggregate converts Manitoba blue clay into an expanded, pelletized product. It has been in operation since 1954.

PCA bulletin deals with cement component hydration

ENERGETICS AND KINETICS of the reaction in the ball-mill hydration of tricalcium silicate at room temperature are described in Portland Cement Association's Bulletin 107. It is a reprint of a paper by D. L. Kantro, Stephen Brunauer and C. H. Weise that appeared in Journal of Colloid Science.

Tricalcium silicate, a portland cement component, can be hydrated in a variety of ways, but paste hydration is most important from a practical point of view. The ball-mill hydration method was studied because paste hydration at customary particle size is slow, taking about a year. Ball-mill hydration took about two days.

Research revealed that the process produced a different calcium silicate hydrate than the paste hydration. Although results were not as expected, the reaction, says A. Allan Bates, PCA's vice president for research and development, "has proved to be most interesting from the point of view of basic research on the hydration of calcium silicates and portland cements."

Mining Congress chairmen named

TWENTY STATE PROGRAM CHAIRMEN have been appointed to draft over-all plans for the 1960 metal mining and industrial minerals convention and exposition of the American Mining Congress. It will be held in Las Vegas, Nev., October 10-13.

These men will help the national program chairman, Oscar A. Glaeser, develop the program. Mr. Glaeser is vice president and general manager of western operations for U. S. Smelting Refining & Mining Co., Salt Lake City, Utah.

George F. Warren, president of Southwestern Portland Cement Co., Los Angeles, is state chairman for California. Nonmetallics also are represented by the Mississippi Valley chairman, Gill Montgomery, vice president of the Fluorspar Div., Minerva Oil Co., Eldorado, Ill.; Arkansas' J. T. Watters, works manager of the mining division, Aluminum Co. of America, Bauxite; Texas' W. P. Morris, president, Duval Sulphur & Potash Co., Houston, and Wyoming's Lee C. Grenier, general manager, Magnet Cove Barium Corp., Greybull.

Hawaiian Cement Corp. starts quarrying June 1

BEGINNING OF QUARRYING, trucking, crushing and storage of limestone June 1 was anticipated by Hawaiian Cement Corp., with cement production scheduled for August and sales beginning in September.

The $12-million, 1-million-bbl. plant at Barber's Point was to be completed by the end of May. The plant includes 19 silos, crushing, grinding, burning and homogenizing facilities, packhouse, administration building and labs.

(Continued on page 76)

Enter 1290 on Reader Card

Another PLUS value..

SEALS IN LONGER LIFE

When you choose a Shafer Bearing, you may be sure it has the *right* seal for *longest life* in your *specific* application.

Whatever the operating condition—whether it's fine abrasive dust from vibrating screens or caustic solutions from industrial washers—the *right* Shafer self-aligning seal is available to assure full bearing protection. Shafer has the industry's largest selection. Call your distributor or mail the coupon.

SHAFER® REX® ROLLER BEARINGS

509

CHAIN Belt Company
4649 W. Greenfield Ave., Milwaukee 1, Wisconsin
(In Canada: CHAIN Belt (Canada) Ltd.,
1181 Sheppard Ave. East, Toronto)

( ) Please send Shafer Bearing Catalog 59A.

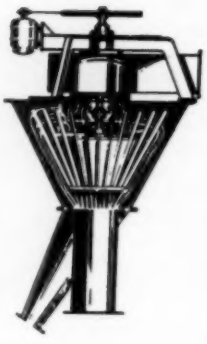
Name.....

Company.....

Address.....

City.....Zone.....State.....

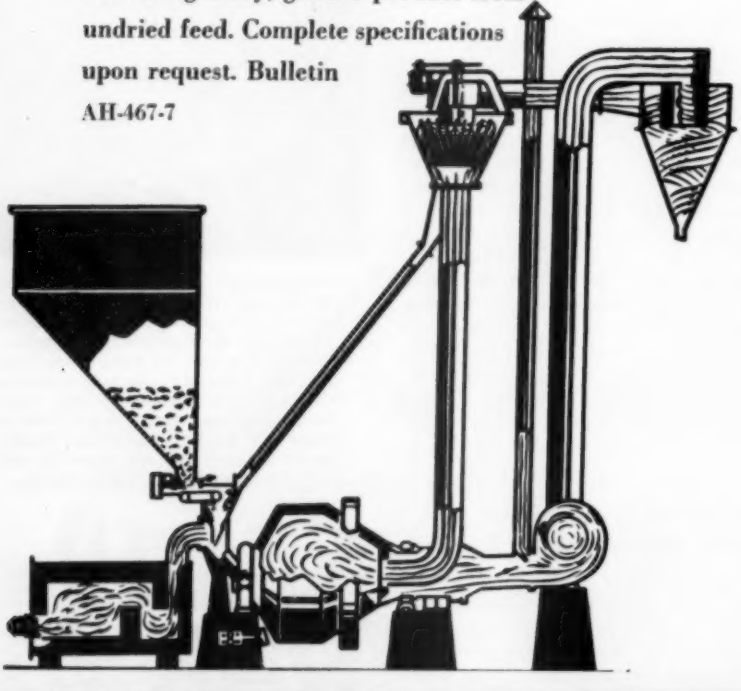
change from...
40 MESH
to
400 MESH



. . . in a few minutes, without interrupting operations. Yet any desired mesh may be maintained continuously. Ease of adjustment and close product control are possible with the . . .

"Gyrotor" Air Classifier

The Hardinge Gyrotor Classifier system, combined with a Hardinge grinding mill is an integrated grinding, classifying and product conveying system. Also available with an air-heating furnace for delivering a dry, ground product from undried feed. Complete specifications upon request. Bulletin AH-467-7



HARDINGE
COMPANY, INCORPORATED
YORK, PENNSYLVANIA • 240 ARCH ST. • Main Office and Works
New York • Toronto • Chicago • Hibbing • Houston • Salt Lake City • San Francisco • Birmingham • Lakeland
Enter 1303 on Reader Card

(Continued from page 75)

Shale survey is statewide activity in California

STATE OF CALIFORNIA'S Division of Mines is conducting an investigation of expandable shale, clay and slate resources in the state. Collection of geological and engineering data on active quarries and field examinations of raw materials in distant marketing centers is being conducted by John L. Burnett.

There are six active producers of expanded shale in California, reports the division's Mineral Information Service. The market for the material is expected to be greatly enlarged in the future, due to the acceleration of construction.

Increased demand may be satisfied, the division reported, by enlarging the capacity of existing plants and establishing new plants in other marketing areas. One of the main objectives of the present study is to provide private industry with basic engineering and geological information on the reserves in California.

IMC will enter phosphate field in the West

INTERNATIONAL MINERALS & CHEMICAL CORP., Skokie, Ill., will enter the phosphate field in New Mexico, according to Mining World. Further development and use of western phosphate reserves will be a major objective. Selected to head the expansion project, which will include plant construction and operation, are Carl A. Arend, Jr. and Merton I. Signer. Both have been prominent in the company's potash activities.

National Gypsum to build plant at Port Tampa, Fla.

NATIONAL GYPSUM CO., Buffalo, N.Y., has started construction of a new gypsum plant at Port Tampa, Fla. This is a market area formerly supplied by National's plant in Savannah, Ga. Raw materials will be brought by ship from the company's gypsum deposits in Nova Scotia.

National Gypsum President Fred A. Manske said that the plant will be fully automated and similar in design to the company's new plants in Lorain, Ohio, Waukegan, Ill., and New Orleans. The Lorain plant started production of gypsum wallboard, lath and plaster in March.

END

Nothing . . . but nothing . . . stops a Rex distributor

The motto for the U.S. Postal Service is just the beginning for a Rex Distributor. Severe climatic conditions . . . impossible delivery requirements . . . unusual product application assistance . . . nothing stops these couriers from the successful completion of their self-appointed responsibility: providing the best in customer service.

Oh, incidentally, they handle only the best: Rex Quality Drive and Conveyor Chains, Sprockets, Flexible Couplings, Belt Idlers, Pulleys . . . Shafer Roller Bearings. Need his name? Write CHAIN Belt Company, 4649 W. Greenfield Ave., Milwaukee 1, Wis. CHAIN Belt (Canada) Ltd., 1181 Sheppard Ave. East, Toronto.

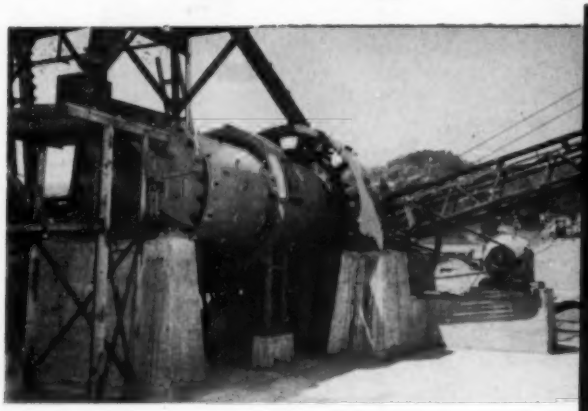
REX®

CHAIN BELT COMPANY

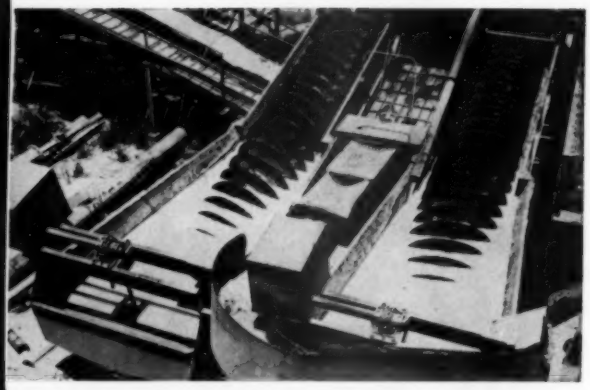
Enter 1210 on Reader Card

Need specification aggregate?

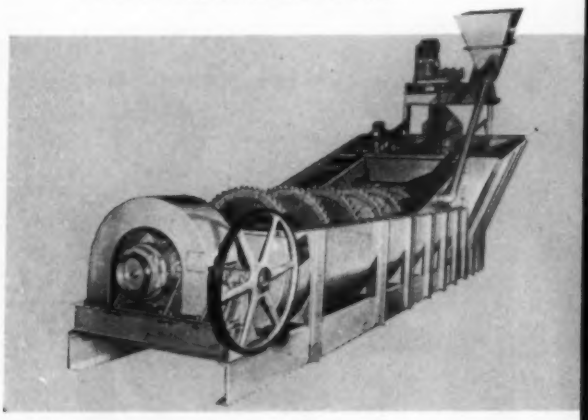
4 low-cost ways to produce it, on location!



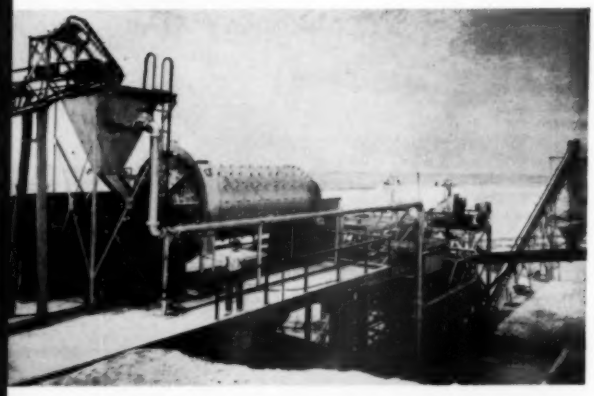
1 *Grinding with Marcy CPD Rod Mills* Grinding stone or waste pea gravel in a Marcy Mill results in a superior, cubical product for blending to meet the most rigid specifications. Marcys have kept many small operators in business; and, have been used on almost all large government dam jobs.



2 *Washing and Classifying with Akins Classifiers* With the Akins Classifier you can wash, deslime, dewater, and *remove or save* sand sizes as desired. A large *working* pool area in classifier is required to do this work...the Akins gives you more working pool area per dollar.



3 *Separating with Akins Heavy Media Separators* Many deposits can be most efficiently treated by the Akins heavy media process. The Akins' large *working* pool area permits close control of products from feed of variable quality or quantity. Reduced media recirculation in the Akins results in lower total horsepower required.



4 *Scrubbing with Marcy Heavy-Duty Scrubbers* Thorough, efficient removal of clay from sand can be accomplished with Marcy Scrubbers. The Marcy principle of small diameter, long length scrubbers gives longer retention time, more contact for scrubbing, less short-circuiting, and lower horsepower...a principle which has been proven on difficult washing of iron ore.

Write for Complete Information

The Company that cares enough to give you the best!

Manufacturing Division

MINE AND SMELTER SUPPLY CO.

DENVER 16, 3800 RACE ST. | NEW YORK 17, 122 E. 42nd ST. | SALT LAKE CITY 1, 121 W. 2nd S. | EL PASO, 1515 11TH AVE. | ALBUQUERQUE, 701 HAINES N.W.

Licensed Manufacturers and Sales Agents in Canada, Australia, Sweden, England, South Africa
Sales Agents in Peru, Chile, Philippine Islands, Japan, New York City (for Continental Europe) and in principal cities of the United States.

Enter 1251 on Reader Card

CALENDAR

OF COMING EVENTS

1960

June 13-14, 1960
National Limestone Institute Inc., Board of Directors' Mid-Year Meeting, Edgewater Beach Hotel, Chicago

June 26—July 1, 1960
ASTM annual meeting and apparatus exhibit, Chalfonte-Haddon Hall, Atlantic City, New Jersey

July 20-23, 1960
National Crushed Stone Association, Board of Directors' Mid-Year Meeting, The Greenbrier, White Sulphur Springs, W. Va.

October 3-6, 1960
National Sand and Gravel Association, Semi-Annual Meeting, Board of Directors, Del Monte Lodge, Pebble Beach, Calif.

October 10-13, 1960
American Mining Congress, 1960 Metal Mining and Industrial Minerals Convention and Exposition, Las Vegas, Nev.

October 17-21, 1960
National Safety Council, 48th Annual National Safety Congress, Chicago, Ill.

November 3-4, 1960
National Slag Association, Annual Meeting, Hotel Mayflower, Washington, D.C.

1961

January 17-19, 1961
National Limestone Institute Inc., 16th Annual Convention, Statler-Hilton Hotel, Washington, D.C.

January 17-20, 1961
National Crushed Stone Association, 44th Annual Convention, Hotel Americana, Bal Harbour, Fla.

January 23-26, 1961
National Sand and Gravel Association, 45th Annual Convention, Hotel Americana, Bal Harbour, Fla.

Jan. 29-Feb. 3, 1961
American Society for Testing Materials, Committee Week, Netherland Hilton Hotel, Cincinnati, Ohio

March 5-8, 1961
American Road Builders Association, 59th Annual Convention, Atlantic City, New Jersey

The Company that cares enough to give you the best!

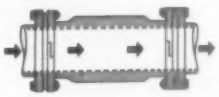
Massco-Grigsby

PINCH VALVES

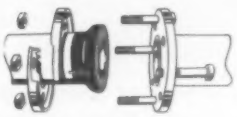
RUBBER, NEOPRENE
for Corrosion and Abrasion

- 1" to 14" inside diameter.
- Pressures to 150 psi.
- Temperatures to 200° F.
- Patented "hinged" sleeve. Recesses serve as "hinges" during compression; reduce strain and permit tight closing.

- Cannot leak or stick.
- No working parts in contact with pulp or liquid; no packing glands.



- Unobstructed flow eliminates high friction loss.
- Remote control available.
- Can be equipped for automatic regulation.



- Split flanges and patented Flex Seal ends assure perfect seal.
- Closing mechanisms... manual handwheel; handwheel with chain and sprocket reduction unit; electric worm gear motor reducer; chain operated torque arm reducer; hydraulic; air-hydraulic.

WRITE FOR NEW CATALOG...

Manufacturing Division

MINE AND SMELTER SUPPLY CO.

3800 RACE STREET • DENVER, COLORADO
OFFICES AND AGENTS IN PRINCIPAL CITIES

Enter 1264 on Reader Card

HINTS & HELPS

PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN

Hook safety latch

UNLESS SPECIFIED as an extra item, a crane manufacturer will not furnish safety latches for hoist hooks. The safety minded users then tie light cord across the throat of the hook, commonly known as "mousing." This is a time-consuming makeshift.

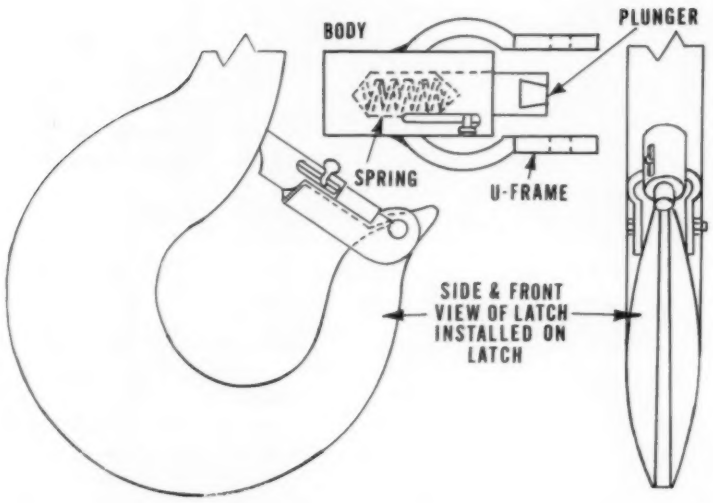
In our plant the design illustrated was accepted by a safety committee as the most practical. It has few wearing parts. All are readily replaced as wear occurs. A carbide insert on the tip of the plunger could make the latch more durable, and all parts are easily machined in the average shop.

The body is made of round stock and drilled to receive the plunger. Next a flat section of spring steel is heated and bent in the U shape shown and fitted to form a lug on either side of the body. The lugs are drilled in line to receive a ¼-in. machine bolt as the hinge pin to mount the latch on the tip of the hook.

The plunger is now loaded into the latch body together with the light compression spring. A stubby fillister head screw is run through the slot in the body and in the plunger to function as a bolt pin for opening the latch.

After a barb has been filed into the tip of the hook, the latch is mounted with a ⅛-in. bronze washer on either side. The length and radius clearance of the body is the final operation to properly fit the neck of the hook.

Paul C. Ziemke, Clinton, Tenn.



Wired for sound

WHEN THE EQUIPMENT in a cement plant is controlled by an operator in a distant control center, you must often look closely to see the sensing devices which generate the control signal.

This mill not only has an "ear," but has a control switch which lets the distant operator stop the mill in a definite position. The hearing aid is a safety device which normally regulates the rate of flow for clinker coming into the mill; loud noise calls for more feed, while muffled sound tapers off the flow of raw materials.

The positioning device works automatically once the operator has decided to stop the mill. When the ball charge is to be removed, the mill is stopped port-down. For inspection or to replenish the ball charge, the mill can be stopped with the manhole on the topside. All this is done without tedious jockeying and mill motor strain to the unit.

No stepladders needed

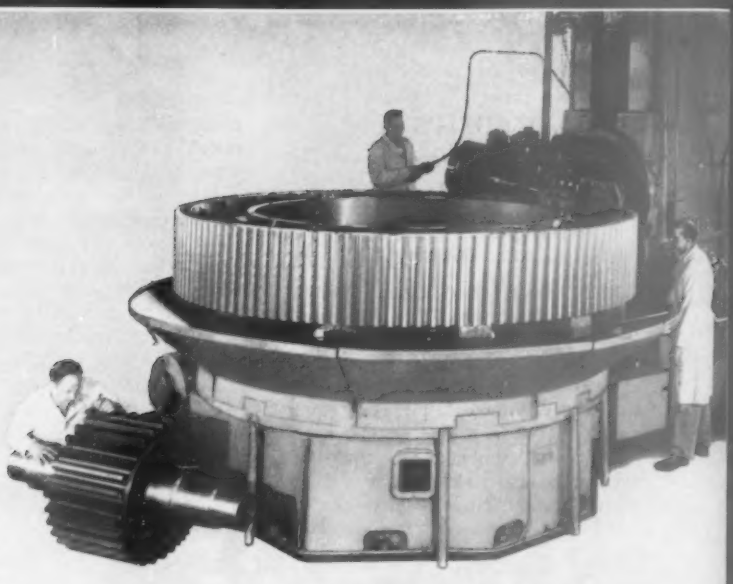
ONE OF THE MARKS of thoughtful, sophisticated plant design is the number and kind of access equipment supplied to inspect and service out-of-the-way places. It's only human nature to overlook lubrication points, inspection doors and other critical operating devices when they are too high, out of reach or sight or are in a hot, dusty location.

A cement producer's new plant has most of this access equipment built right in. Almost every machine and conveyor has a wide platform with wide, sturdy steps leading up to the working parts. Even the pedestal bearings on fans have short ladders bolted right into the concrete piers to make sure that the bearings are not overlooked for want of a stepladder. We'd guess that the extra cost of this "gingerbread" equipment has already been recovered in savings in the repair bill.

(Continued on page 82)

Enter 1235 on Reader Card

GEARS FOR EVERY PURPOSE



Machining the large spur gear for driving the digging wheel of the huge Kolbe Excavator.

Throughout the world—wherever gears are used—ILLINOIS GEARS have a matchless reputation for dependability and superiority that is constantly being proven by their performance in such equipment as this mammoth Kolbe Wheel Excavator designed by the United Electric Coal Companies.

One can well imagine the enormity of engineering work required to design and build this giant earth mover and the responsibility of the components which include numerous ILLINOIS GEARS, in assuring its successful operation.

If you want gears that are made right, *with quality as the first consideration,* specify and buy ILLINOIS GEARS. Ask for full information today.

It takes 3500 cubic yards of earth an hour to satisfy the powerful appetite of this Kolbe Wheel Excavator which is clearing the overburden from a coal strip near Canton, Illinois.

Look for this mark ILLG® *. . . the symbol on finer gears*

ILLINOIS GEARS Reg. U.S. Pat. Off.

Gears for Every Purpose ... one gear or 10,000 or more

ILLINOIS GEAR & MACHINE COMPANY

2108 NORTH NATCHEZ AVENUE • CHICAGO 35, ILLINOIS

(Continued from page 80)

Haulage road care

MORE ROCK PRODUCTS PRODUCERS are taking better care of haulage roads and apparently find that it pays off for them. Even though big tires are able to take rugged service, they are still relatively delicate pieces of equipment.

Sharp rock imbedded in roads can eventually lead to carcass damage or ply separation. Nails or glass can still penetrate heavy tires. Poorly graded or rutted roads cause premature tread wear.

Haulage road care includes regular, frequent grading. Many producers have a man who does this work full time; others do this work as a maintenance chore at the end of every day. Nails and bolts can be removed with magnetic devices, while culverts and drainage ditches at strategic places prevent ruts and soft spots in the roadway. Dust control calls for an application of calcium chloride, oiling or at least a thorough wetting.

Crushed stone producers have found these hints most profitable, but we have seen an occasional sand and gravel producer with similar problems. But almost all have found that grading and dust control are essential parts of their haulage operation.

Electric wiring code

EVEN BIG PRODUCERS find it difficult to identify electric wires unfailingly. And they say that it's not too difficult to get them scrambled—often with disastrous results. A southern cement producer has made a good start with this problem. Big wires have embossed metal strips wired and sealed in place so that electrical maintenance men working at terminals or remote locations can tell what they are working on. Thinner wires are coded and identified with pressure-sensitive colored tapes.

Rail fence

WORN RAILS have proven to be very useful around our plant to keep trucks clear of fire hydrants. These pipes had to be located rather close to a roadway, and it seemed that they had an attraction for truck drivers.

Eventually, we decided to put up a heavy barrier and rails were the best material we could think of to do the job. A power auger put down holes about 5 ft. deep at each hydrant station. Heavy rails about 10 ft. long were put into the holes and grouted into place with concrete.

These were 90-lb. rails, but any weight would probably do just as well. Heavy bars were welded to the rails to make a fence, and these bars were coated with a reflective paint. The only design consideration was to make sure that the bars didn't interfere with access to the hydrant in event of fire.

For some reason trucks seem to avoid these barricades. In the four years since we put up the first one, the paint has been marred on only one fence.

Paul C. Ziemke, Clinton, Tenn.

END

Screen Story...

At the Santa Maria, California, plant of Southern Pacific Milling Company, a 6' x 16' Overstrom Single-Deck washing and de-watering screen stands guard over the WEMCO HMS installations. The big Overstrom takes two sizes in parallel on its double-crowned divided deck — removing that final bit of dirt and excess water just ahead of the two HMS plants.

It's easy to combine *special features* with Overstrom built-in quality to satisfy individual job requirements.

Stepped, split, and divided decks; integral and stationary hoppers and chutes; wash pockets and spray piping; feed boxes and dust lids; ball decks and electric heaters; auxiliary structures — *all these can be provided on short notice at low cost!*

You give us the problem, we'll deliver the solution! Proof through performance? Drop us a line and you'll receive more pictorial examples of *"Overstrom On the Job."*

OVERSTROM VIBRATING SCREENS

OVERSTROM & SONS, INC • 2213 West Mission Rd • Alhambra, California

Enter 1252 on Reader Card

Enter 1253 on Reader Card

"CLASH-BOX" robbing your CASH-BOX?

Crawlers without full-power shift are obsolete . . . and costly!

If your crawlers have master clutches and manual shift transmissions—"clash-boxes" as they're commonly called—you may be passing up profits that should be yours.

With proven Torqmatic Drive in the Model C-6 and the TC-12, Euclid Crawlers provide full-power shift and instant reverse. There's no loss of power or momentum when changing from one speed range to another . . . no delay for clutching and shifting . . . and with a flick of the wrist you change travel direction fast. It's a dependable power train, too . . . proved in thousands of "Euc" earthmovers on every kind of job.

Have your dealer show you how Euclid Crawlers have more productive capacity on any tractor work . . . dozing, ripping, push loading big scrapers, or towing heavy loads. The seconds they save on every work cycle can add up to more cash in your cash box!

EUCLID Division of General Motors, Cleveland 17, Ohio
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland.

Proven Torqmatic Drive provides smooth steady flow of power . . . full-power shift . . . instant reverse . . . easy operation. For push loading scrapers the fast maneuverability of "Euc" crawlers cuts scraper cycle time and steps up production . . . changes from one speed range to another, and from forward to reverse and back again, are made under full power . . . there's no clutching.

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

ROCK PRODUCTS

June 1960

Vulcan scores with rebuilt plant

by Elwood Meschter

THE DIAGNOSIS WAS PESSIMISTIC. A 50-yr. old crushed limestone plant near Chicago was creaking and groaning, working two shifts to eke out 12,000 tons a day of aggregates for the booming, hustling Chicago market. Drastic measures were called for if an extra burden were put on the ancient plant by the urgent need for a wider range of sizes and much more production.

Engineering consultants were called in. They agreed that a major operation was needed if the McCook plant of the Consumers Div., Vulcan Materials Co., was to hold its own. But the management was not content merely to hold its own: Nothing less than market supremacy was its aim.

This goal called for a big installation, perhaps one of the largest in the country. The cost would be high—$5 million—but the result would be a 1,500-tph. aggregate preparation system geared to meet the exacting needs for the concrete to be used in Chicagoland's expressways, harbors, industrial developments and airports.

This case history starts in 1957 when consulting engineers reported that the "old red barn" at McCook, Ill., had outlived its usefulness. The plant that had been modern as recently as 1940 could no longer be counted on to support more screens or bigger equipment. Very little of the existing machinery could be renovated economically to do a bigger or better job. Like the ancient Edison roll crushers, much of the equipment was ready for a museum.

Once the engineer's report was in, Vulcan management moved rapidly to set in motion a 2½-yr. construction program. First major problem to crop up was the need to maintain aggregate production without interruption. This was a tricky problem requiring close cooperation between the production department and the construction engineers, but the ultimate solution was to erect the new plant in two stages. Stage 1 would set up a 1,500-tph. primary crushing and storage system right in the quarry where there was plenty of elbow room. This arrangement would pay dividends from the first, since it would eliminate a long, grinding truck haul to the old plant high on the rim of the quarry.

Stage 2 was the construction of a 1,200-tph. aggregates preparation system designed to pro-

Please turn page

LEFT: The new limestone crushing installation at McCook was designed for 1,500 tph. but easily handles peak loads of 2,000 tph. through this 54-in. primary gyratory crusher

RIGHT: Each quarry is tooled with a drill, 5-cu. yd. electric shovel and a pair of new 40-ton rear dump trucks

VULCAN SCORES WITH REBUILT PLANT

continued from page 85

duce a large number of sizes at the same time. This part of the installation took particular design and construction skill since it had to fit between the working sections of the old system. Finally, with the new equipment ready to go, the old concrete and timber buildings were demolished to reveal the sparkling modern plant. The completely revitalized operation went into full production in October 1959.

Putting the primary system on the quarry floor was a careful bit of strategy. Here there is plenty of room to store more than 10,000 tons of minus 3-in. rock as a surge for the finishing system and another 10,000 tons of fluxstone for a nearby lime producer. Truck haul distance is drastically reduced. Now the four 40-ton trucks concentrate on maintaining a steady flow of blasted rock to the primary crusher.

Two quarries are worked to provide enough limestone at better than 1,500 tph. The fluxstone ledge is a 45-ft. high-calcium formation on the west side of US 66, reached through a truck tunnel under the highway. "Whiterock" is a dolomitic limestone, a 45-ft. deposit just under the fluxstone. This formation is on the east side of the road and the face is a short distance from the primary crusher.

Normal production of aggregates calls for a half-and-half mix from each quarry. But fluxstone is taken only from the west quarry. Each face is tooled with a 6½-in. hammerdrill, a 5-cu. yd. electric shovel and a pair of haulage trucks. Secondary breakage of the blocky rock is usually done with a dropball except when these big cubes are collected to fill an occasional order for jettystone.

All four trucks could dump into the crusher hopper at one time, if necessary, and the armor-clad hopper could hold their loads. The 54-in. gyratory discharges minus 6-in. rock into a 75-ton concrete surge bin. A 48-in. belt feeder feeds this material uniformly to the first unit in the belt conveyor system.

Flow of material into the system is controlled manually on the 25-hp. variable speed feeder drive. A speed range of 4 to 1 permits a feed rate between about 500 and 2,000 tph. The actual amount of crushed rock put on the belt conveyor is measured, recorded and totalled by a scale.

Great care was taken to maintain access to the big gyratory crusher. For normal operation a 10-ton overhead crane can handle most auxiliary equipment, including feeder parts and slabby rock caught in the maw of the gyratory. An access road parallels the belt conveyor to bring trucks down near the base of the crusher. The massive parts of the crusher will be handled by a 60-ton stiffleg crane now under construction. A small elevator makes it possible for a man to make regular inspection trips to the depths of the crusher pit.

The long inclined belt conveyor from the primary to the secondary crusher can handle as much as 2,000 tph. and can start fully loaded or partially loaded. This severe service calls for big drives—a pair of 200-hp. motors direct-coupled to the ends of the head shaft through reducers. Controls limit the starting acceleration of the motors to limit the tension on the belt to about 150 percent of full-load tension. This is done with an 11-point automatic control and an overriding manual control for faster starting. But if either control should exceed the preset torque, the system is stopped automatically. Once started, the conveyor does not stop again during a normal operating day. The secondary crusher and all major belts in the entire system have torque-limiting starting controls to prevent belt damage at start-up.

A pair of vibrating screens scalps off material for the 7-ft. extra heavy duty cone crusher. Normally, these screens take off plus 2½-in. rock for the crusher which is set then for 2½ in. Through-screen material drops directly to the foot of the next belt and forms a cushion of material on it for the deluge of crushed rock dropping down.

Two belt conveyors take the minus 2½ in.-rock to one of the two surge piles—aggregate or fluxstone. An inclined belt delivers to a distributing conveyor with a traveling tripper. This unit can be controlled to distribute only fluxstone along a 150-ft. travel, only aggregate stone along 150 ft. or to make a pile anywhere along the system.

Normally, as much as 9,400 tons each of whiterock and fluxstone can be held in each surge pile under the long gallery. But the capacity of the area is drastically increased by bulldozing material far to each side.

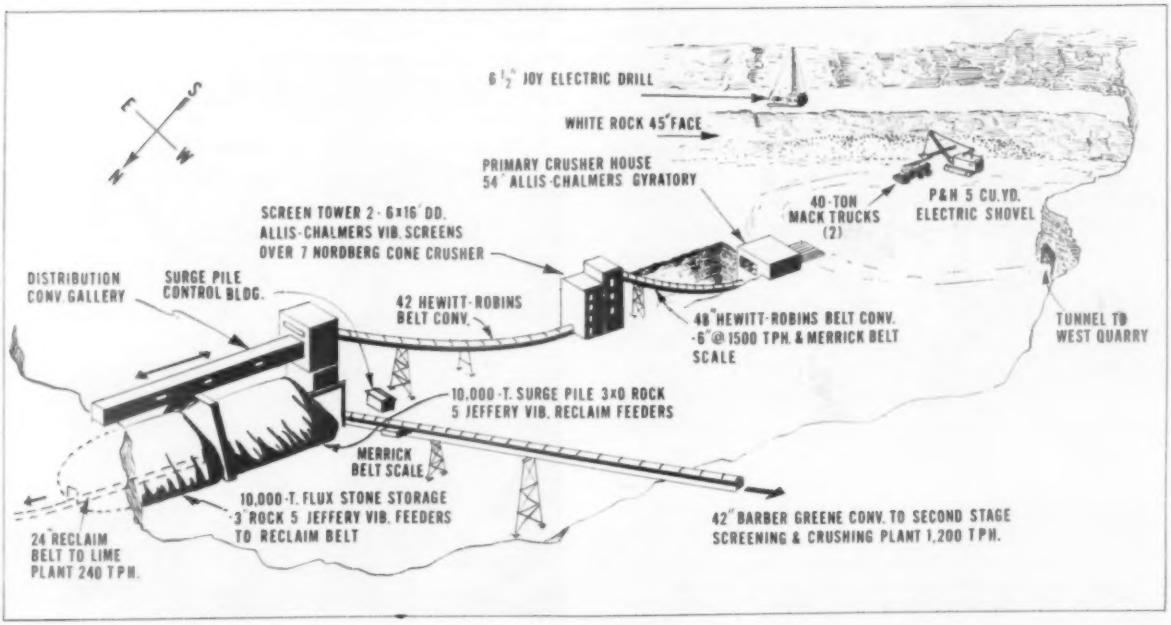
Fluxstone reclaim is controlled from the lime producer's plant to suit its production requirements. Five vibrating feeders under the pile draw rock to a 24-in. belt conveyor rated at 240 tph.

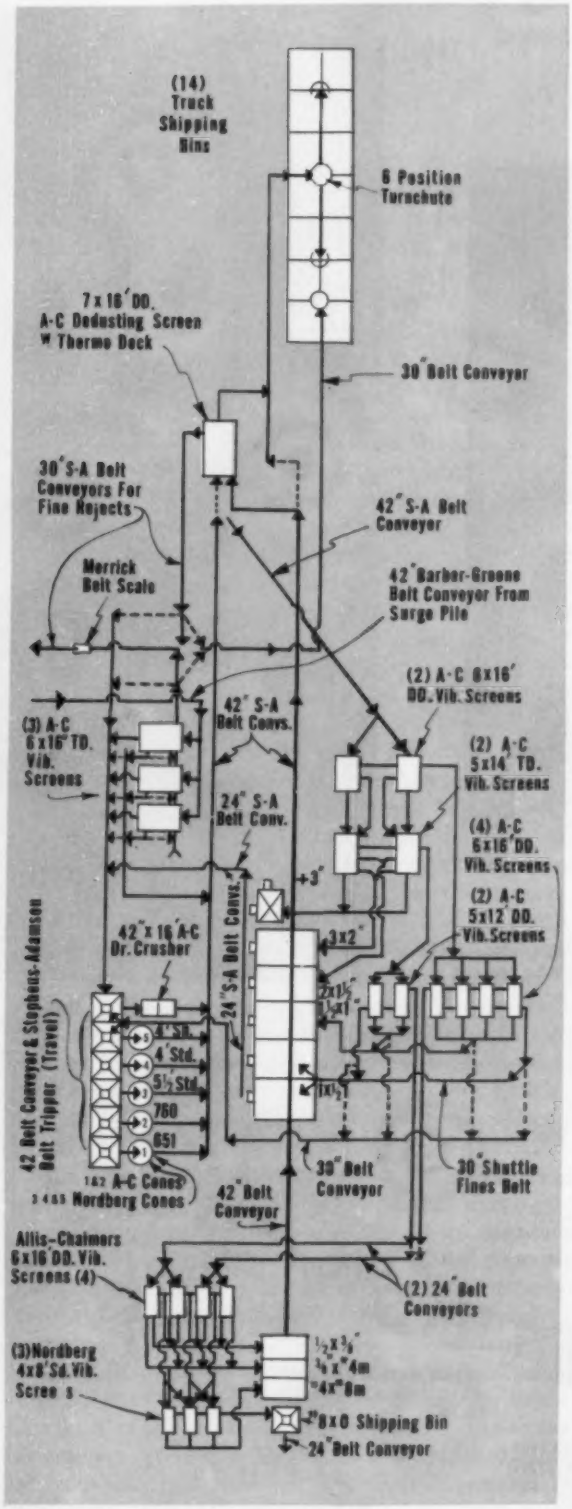
Aggregates reclaim is controlled from a small room near the surge pile. Here again, five vibrating feeders with 10-point controls pull out rock to a belt conveyor. While the design capacity is 1,200 tph., the 42-in. reclaim conveyor system easily handles 20 percent more capacity—and often better than 1,650 tph. The flow of rock out of surge

Please turn page

THE $5 MILLION CRUSHING AND SCREENING PLANT at a glance—surge storage is at the right, while the aggregates preparation system is perched high above on the rim of the quarry

CRUSHED LIMESTONE on its way from the primary crusher to a pair of screens over a secondary crusher. This belt is driven by a pair of 200-hp. motors

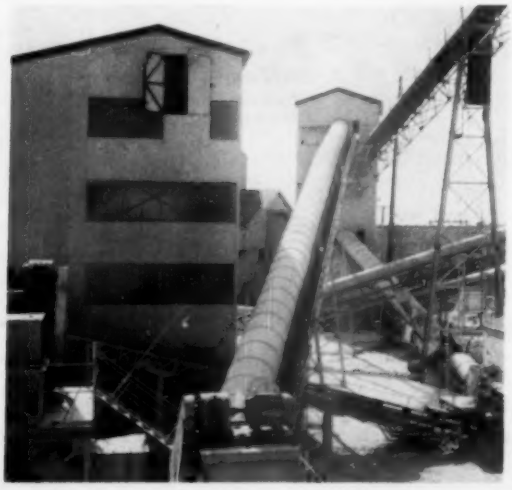

6½" JOY ELECTRIC DRILL
WHITE ROCK 45° FACE
PRIMARY CRUSHER HOUSE
54" ALLIS-CHALMERS GYRATORY
40-TON MACK TRUCKS (2)
P&H 5 CU.YD. ELECTRIC SHOVEL
SCREEN TOWER 2 - 6'x16' DD. ALLIS-CHALMERS VIB. SCREENS OVER 7 NORDBERG CONE CRUSHER
DISTRIBUTION CONV. GALLERY
SURGE PILE CONTROL BLDG.
42 HEWITT-ROBINS BELT CONV.
48" HEWITT-ROBINS BELT CONV. -6"@1500 TPH. & MERRICK BELT SCALE
TUNNEL TO WEST QUARRY
10,000-T. SURGE PILE 3x0 ROCK 5 JEFFERY VIB. RECLAIM FEEDERS
MERRICK BELT SCALE
10,000-T. FLUX STONE STORAGE 3" ROCK 5 JEFFERY VIB. FEEDERS TO RECLAIM BELT
24" RECLAIM BELT TO LIME PLANT 240 TPH.
42" BARBER GREENE CONV. TO SECOND STAGE SCREENING & CRUSHING PLANT 1,200 TPH.


(14) Truck Shipping Bins
6 Position Turnchute
7 x 16' DD. A-C Dedusting Screen w Thermo Deck
30" Belt Conveyor
30" S-A Belt Conveyors For Fine Rejects
42" S-A Belt Conveyor
Merrick Belt Scale
42" Barber-Greene Belt Conveyor From Surge Pile
(2) A-C 8x16' DD. Vib. Screens
42" S-A Belt Conys.
(3) A-C 6x16' TD. Vib. Screens
(2) A-C 5x14' TD. Vib. Screens
24" S-A Belt Conv.
(4) A-C 6x16' DD. Vib. Screens
+3"
(2) A-C 5x12' DD. Vib. Screens
42" x 16' A-C Dr. Crusher
3x2"
24" S-A Belt Conys.
42 Belt Conveyor & Stephens-Adamson Belt Tripper (Travel)
4' Sh.
4' Std.
5½ Std.
760
651
1&2 A-C Cones
3 & 5 Nordberg Cones
39" Belt Conveyor
30" Shuttle Fines Belt
42" Belt Conveyor
Allis-Chalmers 6x16' DD. Vib. Screens (4)
(2) 24" Belt Conveyors
(3) Nordberg 4x8' Sd. Vib. Scree s
8x8 Shipping Bin
24" Belt Conveyor

A MAZE OF CONVEYORS maintains great flexibility to control flow of aggregates through crushing and screening system

A LONG INCLINE BELT leads from the quarry to three vibrating screens that make the first size separations. Grade 14 fines from these screens are put back into quarry (left)

DOMINANT BUILDING in the plant houses 10 vibrating screens that make coarse aggregates for storage. At the right is the crusher building with third and fourth-stage crushers



VULCAN SCORES WITH REBUILT PLANT

continued from page 87

storage is weighed, recorded and totalled with a belt scale and instruments.

Now for the second stage of the big new plant. This is perched 100 ft. above the floor of the quarry. Construction started in June 1958 and was completed in October 1959. While it was building, the old plant had been getting its raw materials from the first phase since December 1958. Design capacity of the second section is 1,200 tph. but continuous operation at 1,650 tph. is a regular procedure during the building season in Chicago.

With the two independent sections it is possible to work the quarry and put material into surge storage on a separate schedule. Then the aggregates production section can operate as an independent unit as long as there is material in the surge pile, usually enough for a second shift.

Five major sections make up the screening and crushing plant: (1) primary screening to make the basic size separations—coarse rock to be crushed, middlings for direct shipment and grade 14 fines for quarry storage; (2) a crushing system to make a wide range of products ranging down from 1½ to minus 8-mesh fines; (3) coarse aggregate screening system to make five major products; (4) fine screening system to make four products from crusher fines and (5) a shipping system that blends the stored products and automatically loads them into truck shipping bins.

Great flexibility has been built into the entire system starting with the three parallel triple-deck vibrating screens. Oversize from these units can go only to the crusher system. But the two lower decks of the screens have splitter gates to route the flow of material from one or more screens in different directions. When these gates are worked in conjunction with different size openings in the screen cloths, aggregate production can be matched to shipping requirements.

Rock from the middle decks can be diverted to the crusher building or to the shipping system. Material from the lower decks can go direct to the shipping system or to the fines handling system. Through-screen fines are usually sent to a storage pile but it is possible to divert them to the truck shipping bins. A stacker belt puts fines into a huge pile in the quarry where grade 14 material is stored. A belt scale measures and records the volume of this material.

Normal operation of the aggregates crushing system uses four of the six crushers as third-stage cone crushers. The other two, a cone and a double-roll unit do fourth-stage crushing but can work on the third-stage system as well. Using the two stage system the belt tripper distributes coarse rock from the three coarse sizing screens to bins above the four cone crushers. The fourth-stage crushers receive intermediate sizes which have been brought back from the screening system on a belt conveyor.

An ingenious bin control system maintains a head of material above the crushers regardless of the rate of flow of material into or out of the bins.

Each bin has three pendulums hanging down into it. Each bar is a different length, corresponding to the depth of control needed and the upper end of each bar operates a switch. As the material in a bin falls below the shortest bar, the pendulum swings free and the switch opens. A red light on the operator's panel signals this condition. As material drops past the middle-length pendulum, it too, swings free and operates a switch and a signal light.

At the same time, it actuates a signal that calls the tripper. This machine moves into place to put rock into the bin and it stops only when the high-level pendulum indicates a full bin. The tripper returns to its normal distribution routine unless another bin has signalled for more material.

Equally ingenious is the feeder control system to keep the crushers operating at maximum capacity. Each belt feeder is equipped with an eddy-current clutch between the motor and reducer to give a 10½ to 1 speed range on the feeder. Each clutch responds to a signal generated by the amperage drawn by the crusher it feeds. If the crusher motor draws more power as it overcomes a surge of rock, the feeder slows down. As the overload clears from the crusher it calls for less power and the clutch lets the feeder increase its speed.

One long belt conveyor gathers all the crushed rock from all six crushers. It also picks up middlings from the three sizing screens and takes the combined stream of material to the top of the aggregates screening system.

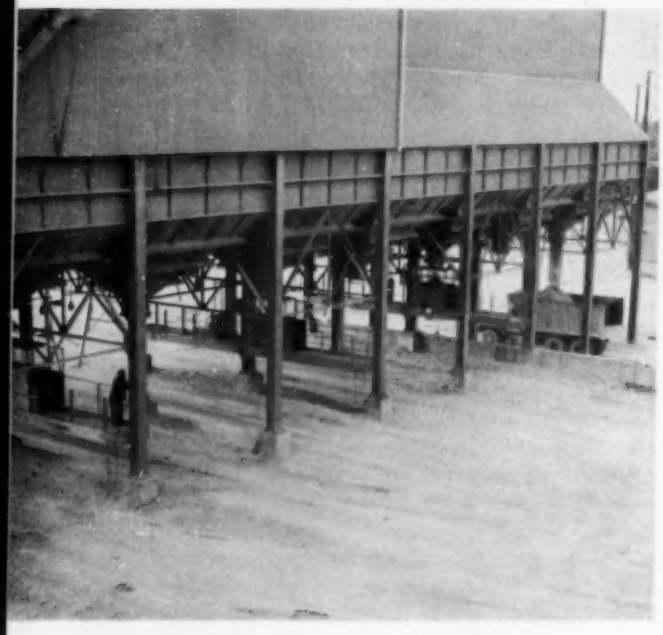
Tremendous flexibility has been designed into this part of the system to give alternative routes for the flow of materials:

- Normal operation sends the crushed rock to the coarse aggregates screening tower.
- It can be put over a dedusting screen and coarse material sent direct to the truck shipping bins
- For chip production and alternative production sizing, all material can be dropped through the dedusting screen and returned to the surge bins above the six crushers.

Please turn page

VULCAN SCORES WITH REBUILT PLANT

continued from page 89



FAST TRUCK LOADING is assured through 14 steel bins. Hydraulically operated gates are opened and closed by operators in ground-level control houses

Aggregate production takes place in two parallel screening systems. The split of the better than 1,000 tph. of minus 3-in. rock is done at the two vibrating screens at the very top of the screen building. Each segment of the system has five vibrating screens and normally these make five products: Oversize, 3 x 2 in., 2 x 1½ in., 1½ x 1 in. and 1 x ½ in. Oversize drops to a steel truck loading bin that can discharge to a recycle belt system. Through-screen fines travel on to another section, the fine screening system.

Flexibility in this part of the system is controlled by a set of motorized splitter gates on the several vibrating screens. Material from one or both of the parallel screening systems can be diverted to storage bins or to a conveyor system leading back to the fourth stage crushers. There are two bins for the 1 x ½-in. size and a shuttle belt conveyor distributes material between them.

The major control center for the entire screening and crushing plant is placed at the very top of the aggregates screening building. A panel board with signal lights indicates the level of materials in all bins and the operation of all screens, feeders and conveyors.

Prestressed concrete stave bins hold the coarse and fine finished aggregates. These staves were made by Consumers Div. in their nearby prestress plant. Inserted horizontally in slots in concrete piers these prestressed slabs make strong, durable and economical storage bins. All aggregate bins (except the steel bin for oversize) have reclaim openings in the bottom. These openings are fitted with vibrating feeders to let the material be drawn to a reclaim belt conveyor running the full length of the storage bins.

These concrete stave bins have chute openings above ground level. The openings on the north side let trucks take material direct from the bin. Those on the south side have gates to regulate the flow of each aggregate into a belt conveyor reclaim system. This is the way that sized aggregates can be returned to the crusher house to be resized—another feature in the flexible system.

Fine screening is similar to the coarse aggregate system. It, too, is divided into parallel systems to handle the fines from each coarse setup. Each of the two flows of material is split between two vibrating screens to make ½ x ⅜ in. and ⅜ in. x 4-mesh production sizes.

Since the fines are often damp during the winter or during Chicago's summer downpours these screens are fitted with both chains and heaters to keep the material flowing. The chains are simply several strands of coil chain that hang from oscillating bars at the top of each deck. Between the movement of the bars and the natural vibration of the chains from the screen cloth, the decks are kept clear. Natural gas fuels the burners placed on each side of each deck on the double-deck screens.

Three rod-deck vibrating screens take fines from three of the four top screens and yield two finished products, 4 x 8-mesh rock and 8-mesh x 0. The coarse fraction is stored in one of the concrete stave bins in the reclaim circuit while the fines are deposited in a steel truck-loading hopper.

The 1,500 tph. shipping system is controlled at a panel board high above the 14 truck-loading bins. Here the operator directs the flow of blended aggregates into bins by regulating the operation of feeders, conveyors and turnspouts. Here, too, the operator makes the selection of materials going into each blend shipped.

These controls have two features unusual in any rock products producer's shipping system. First, the blending controls are set up as a dual system. One of the two 10-point controls for each feeder

can be set to the proportion required for the next blend while the other bank of controls is in operation. When one run has been completed the next set of controls takes over immediately. The operator is then free to make new settings on the bank of controls or to retain the original settings.

Secondly, the operation of each bank of dual controls is subordinated to time-delay relays. These relays make sure that only the most remote feeder for each blend starts to put material on the belt conveyor. The next feeder does not operate until the relay has sensed that enough time has elapsed to bring the stream of material right under the next most remote feeder. This continues until every feeder needed for a particular blend is working.

The relays work in the same way when the system is stopped. The most distant feeder stops; then every intermediate feeder stops just as the last of the batch clears it. In this way every cross-section of material on the belt—beginning and end of the run as well—has the same size distribution.

This automatic system is actuated by the operator after he has plotted the blend and has set the selector switches for belts leading to the right bin. A touch of a button sets the automatic controls in motion. The old blend is discontinued and the new blend starts. There is about 30 ft. of clear space on the collecting belt between the old and the new mixes. This distance corresponds to the time it takes for the turnspouts to rotate between the bin for the old mix and the bin for the new blend. No sooner have the spouts turned to the new setting than the new blend comes pouring through.

Three turnspouts distribute aggregates to the twelve bins in this part of the shipping system. One is a six-point chute to distribute to any of four bins or two belt conveyors. Each conveyor, in turn, sends material to storage through a four-position spout.

Another part of the shipping system is reserved for shipping fines produced by the first three screens in the system or for shipping by one of the alternative systems. Four bins normally hold these materials, but two of these can be reached by the main shipping system above.

Degradation dust is removed from the blended aggregates with a big double-deck vibrating screen. Most specifications require that minus 4-mesh fines be removed from the sized aggregates before shipment. Upper deck of this 7 x 16-ft. screen has a 1 in. sq. cloth to protect the fine-mesh cloth below from the full impact of the stream of material.

Fines from this dedusting screen are conveyed to the fines disposal system where they join the grade 14 fines removed previously. But since the degradation fines were originally produced from hard rock they are an acceptable fine product for mixing back with the products of the fine screens. As an extra dividend for the flexible system, these fines are often returned to the crusher building and eventually wind up with sized fines.

Actual truck loading is controlled by operators at ground-level stations. They manipulate the controls of the hydraulic gates to put material into trucks of Consumers Div. customers. Last stop for the trucks in the plant area is a scale.

This final scale is part of a weighing system that lets the managers determine the amount of material in process throughout the new plant. The first belt scale in the quarry determined the volume of material going to the surge pile. A scale on the reclaim system indicated the volume of rock going to the screening and crushing section while a third belt scale measured the amount of grade 14 fines put over the bank into storage. END

MAJOR EQUIPMENT REFERENCE

PHASE I

Drills, electric (1), diesel (2)	Joy Mfg. Co.
Wagon drill	Gardner-Denver Co.
Haulage trucks, 40-ton (4)	Mack Trucks, Inc.
Shovels, 5 cu. yd. electric (2)	Harnischfeger Corp.
Primary crusher, 54" gyratory	Allis-Chalmers Mfg. Co.
Vibrating screens, 6 x 16' dd. (2)	Allis-Chalmers Mfg. Co.
Secondary crusher, 7' cone	Nordberg Mfg. Co.
Belt scales (2)	Merrick Scale Mfg. Co.
Vibrating feeders (10)	The Jeffrey Mfg. Co.
Conveyor idlers	Barber-Greene Co.
Conveyor idlers	Hewitt-Robins, Inc.
Belt tripper	Hewitt-Robins, Inc.
Metal detector	RCA, Inc.
Design and construction	Western-Knapp Engr. Co.

PHASE II

Vibrating screens, 7 x 16' dd. (1)	Allis-Chalmers Mfg. Co.
6 x 16' td. (3)	Allis-Chalmers Mfg. Co.
6 x 16' dd. (10)	Allis-Chalmers Mfg. Co.
5 x 14' td. (2)	Allis-Chalmers Mfg. Co.
5 x 12' dd. (2)	Allis-Chalmers Mfg. Co.
Cone crushers, (2)	Allis-Chalmers Mfg. Co.
Roll crusher, 42 x 16"	Allis-Chalmers Mfg. Co.
Cone crushers, 4' (2), 5'	Nordberg Mfg. Co.
Vibrating screens, 4 x 8' (3)	Nordberg Mfg. Co.
Conveyor idlers	Stephens-Adamson Mfg. Co.
Conveyor tripper	Stephens-Adamson Mfg. Co.
Conveyor belts	Boston Woven Hose Co.
Conveyor reducers	The Falk Corp.
Conveyor motors	Crocker-Wheeler Div., Elliott Co.
Feeder motors (5)	Louis Allis Co.
Feeder speed controls (5)	Dynamatic Div., Eaton Co.
Vibrating feeders (8)	The Jeffrey Mfg. Co.
Shipping scale	The Howe Scale Co.
Design and construction	Western-Knapp Engr. Co.

Operation Attitude leads to safety mark

Bestwall Gypsum Co., seven-plant producer, bests the industry's safety records. Safety Director Matt Fink explains how it is done

FOURTEEN HUNDRED COMMITTEES OF ONE—that's the secret of the safety record posted by Bestwall Gypsum Co. Their program, under Director of Safety, Matt F. Fink, is to get each man thinking constructively about safety and its importance to him.

"You can't order safety, we've found," Mr. Fink explains, "it's a positive attitude in each hourly employe's mind."

Result of this program: Bestwall's seven plants posted the injury-frequency rate of 2.00 in 1959. (The gypsum industry as a whole posted a creditable 3.47 mark last year.) The National Safety Council, U. S. Bureau of Mines, Gypsum Association and Explosives Engineer magazine presented Bestwall and its plants with a number of (close to 12 expected) national safety awards for 1959.

Bestwall is convinced that "attitude" is of ultimate importance in maintaining a good safety record. After Mr. Fink came to Bestwall in 1955, a study was made which showed that 92 percent of accidents were caused by unsafe acts, only 8 percent by unsafe equipment. For years, safety engineers had worked to make equipment safer, and had succeeded quite well. Now the task was to get each man thinking safety every working hour. Bestwall, with Matt Fink at the helm of the program, succeeded. So can you. Here's the way!

First, you have to put the program on a sound

MEMOS like these are posted on the Bestwall bulletin boards as safety reminders. Signed by the manager at each plant, they bring the safety message close to each employe

March, 1960

To All Members of Our Organization

Subject: "SAFETY" IS MORE THAN A WORD!

As far as safety is concerned, the average person is better off at work than he is at home, or on the road to work!

Statistics show that last year, more than 44% of all accidents occurred in homes, 33% on the highways, and but 20% on the job.

American industry has invested millions of dollars in safety programs and through them has helped reduce industrial accidents many fold. Guards for machinery, personal safety equipment for employees, safety measures and devices in all departments, and persons whose sole preoccupation is safety - are bringing down the rate of industrial accidents constantly each year.

But "safety" is more than a word, more than a program. It is a brainy, vigorous effort to see that we live out our full share of time on the good green earth - that we live it to the full, while we're at it. "Safety" is a series of constant, man-sized steps along the sunny side of life. It is more ability, more time, more dollars, more security. "Safety" is more than an expression - it's action. BY YOU!

Sincerely yours,

July, 1960

To All Our Associates

Subject: CONSIDER ACCIDENTS FROM THIS ANGLE:

Suppose someone were to show you a bottle containing 300 pills, all exactly alike. He tells you that 1 of these pills is deadly poison, 29 of them will cause violent illness, and the rest are harmless. How much would he have to pay you to take one of these pills? Nothing could induce you to take such a risk.

Statistics show that for every 300 accidents, 1 will result in death, 29 will cause disability, and the rest will be harmless. In other words, when you take an unnecessary chance that may result in an accident, it's the same as taking one of the pills in the bottle, and you do it for nothing. The only reward you can possibly get is the saving of a few seconds' time or a few ounces of energy.

So, the next time you are tempted to take an unnecessary risk, remember the story of the 300 pills in the bottle. Put the pill back in the bottle--take your time and do it the safe way!

Sincerely yours,

Marlin Bulletin Board Service

foundation by a careful recheck of equipment for unsafe spots. Then you buy guards for the offending units. It will cost a bit of money, but lower insurance premiums resulting from a better safety mark and an organized program will more than make up the cost.

Second, you institute rigid housekeeping rules, and enforce them. Bestwall has found that you can't get the men thinking positively about good safety habits with an untidy plant.

Finally, you set up what U. S. Steel Corp. calls "Operation Attitude." The idea is to show plant and department chiefs, plus foremen and hourly workers, that safety is not only interesting, but also profitable.

Bestwall's Fink has some interesting ways of pointing this out to each man. First, supervisory personnel see to it that employes are reminded that safety is much more than a low injury-frequency rate. It's something that, were it followed to the letter, would eliminate the nearly 2 million on-the-job accidents and 14,300 deaths that occur in the U. S. annually. This is brought home forcefully in one of a set of safety letters Bestwall's plant managers post on plant bulletin boards at regular intervals.

"We know that statistics are considered 'boring' by some," one of the letters reads, "but is this so when the statistics deal with the very lives of human beings, like you and me? Think about these figures in terms of men, women and children and think ahead for safety!"

Second, Bestwall gets its men thinking positively about safety: It holds monthly meetings at the plant and department levels. Taken as a full-fledged concern of management, just like production and sales, safety sinks in deep at the meetings. At the monthly executive safety committee meeting, the plant manager, plant safety director and all department chiefs are present. Perhaps more important, three hourly employes sit in. The weight given to the job of safety is impressive.

All accidents requiring a doctor are carefully analyzed at the meetings and corrective action must be taken. "We never permit 'carelessness' as the given cause for an accident in the foreman's report," Mr. Fink asserts. "It's got to be thought out more carefully than that." Foremen and department supervisors take accidents very seriously. The supervisor invariably promises to take on the task of correcting the dangerous equipment or careless worker.

What if an "accident repeater" doesn't mend his ways? He then is requested to appear before the safety committee for a review of his accident history. This is done to remind him of the possible serious results of his careless work habits.

Bestwall does this by asking the man for his

Please turn page

THIS SCENE will be reenacted this summer when a Bestwall mine again receives the "Sentinels of Safety" trophy and flag from Explosives Engineer magazine. Last month, the Bureau of Mines announced the award for 1959 went to the Akron, N.Y., mine. Last year, the above action took place at the company's mine in Grand Rapids

OPERATION ATTITUDE LEADS TO SAFETY MARK

continued from page 93

views on the matter. Very possibly something is wrong with his equipment. More likely, the worker simply has never been enthusiastic about the need for safety.

At each monthly safety committee meeting, a movie or slide show on a safety topic is shown. Bestwall and Certain-teed Products Corp., from which it was created, have 16 plants between them. They rotate a carefully selected set of 16 movies or slide shows, then start a new set.

But perhaps the best way to build safe work habits, and maintain them, says Mr. Fink, is the "Five Minutes a Day" safety-talk requirements Bestwall has set up for each foreman. The National Safety Council booklet, "Five Minute Safety Talks," is given foremen as a guide, with a new talk suggested for each month.

The foreman picks out three men each day, spends five minutes with them talking safety and asks for their ideas on building safety in the plant. Not only does this get new ideas from those most likely to spot unsafe working conditions, it also gets the employes thinking safety. That is the key.

Mr. Fink has had 20 years in the safety engineering field and has developed some interesting ideas about safety in that time. Take, for instance, his revision of the three E's of safety—Engineering, Education, Enforcement. Mr. Fink has changed that last word to Enthusiasm. Enforcement has a "coercion" context, pressure from the top, which is not the way to get each worker thinking positively about safety.

Instead, Bestwall's safety supervisors at each plant know the best plan is to get the employes, themselves, actively working for a better record.

"Ours is just a simple, down-to-earth program," Mr. Fink explains.

It has often been held that there are hidden reasons behind a worker's tendency to be "accident prone," Mr. Fink says. Find these causes, perhaps family troubles, and you've begun to solve the puzzle.

"I personally believe that there is no such thing as an 'accident-prone' worker," he contends. They simply are workers the firm hasn't yet converted with its gospel of common-sense safety.

One final way used to build employe interest in safety: Bestwall's annual interplant safety contest. A combined frequency-severity yardstick is used to determine the winning plant.

The Sigurd plant is living proof that most remarkable safety records can be established. This plant actually established a nine-year, accident-free record which involved an amazing 3 million man-hours!

Here is a rundown on the showing Bestwall has made in its safety program. The figures give lost-time accidents per million man-hours:

	Frequency Rate		
1954	14.72	1957	3.80
1955	11.50	1958	0.42
1956	5.29	1959	2.00

Bestwall Gypsum Co. has seven plants: Sigurd, Utah; Blue Rapids, Kans.; Acme, Texas; Fort Dodge, Iowa; Grand Rapids, Mich.; Akron, N.Y., and Brunswick, Ga. An eighth plant, at New Orleans, La., should be in production this fall.

As of March 1, 1960, outstanding safety records among Bestwall plants were: Akron, N.Y.—1,628,-234 man-hours without a lost-time accident since August 1956; Grand Rapids, Mich.—1,067,069 man-hours since September 1957, and Acme, Texas—801,077 man-hours since August 1958.

For two years in a row, 1958 and 1959, a Bestwall mine was awarded the coveted "Sentinels of Safety" trophy from Explosives Engineer magazine. Given annually for the best record in nonmetallic underground mines in the safety competition sponsored by the Bureau of Mines, it went to the Grand Rapids mine in 1958. And it has just been announced that the Akron, N.Y., mine has won it for 1959. The Akron mine earned it with its record of 308,368 man-hours without a lost-time accident since August 28, 1956.

Figures in the accompanying table permit comparisons of the various rock industries' safety records in 1958. It is apparent that most have a long way to go to equal the outstanding record of the cement industry.

ROCK INDUSTRY INJURY RECORD
(per million man-hours of exposure)

			1958 Frequency Rates	
Industry	Plants	Employes	Total	Fatal
Gypsum	53	1,222	4.13	.4
Blast-furnace slag	66	1,951	9.7	.3
Lime	119	6,254	20.3	.1
Cement	192	30,630	3.9	.1
Sand & Gravel	—	31,000	18.6	.6
Crushed Stone				
Limestone	1,478	27,980	33.4	.4
Trap rock	392	3,870	48.3	.8

Source: Bureau of Mines' "Work Injury and Employment Data for Mineral Extractive Industries—1957-58" (Mineral Industry Survey H.S.S. 478) **END**

Five contaminants are taken out of concrete and mason sand to meet top specifications

How jigs solve a coal problem

by H. B. Charmbury*

METHODS OF UPGRADING AGGREGATES are getting closer scrutiny from producers faced with a two-sided prospect: On one hand, specifications are getting stricter; on the other, high-grade deposits are increasingly more difficult to find. In its old plant location, sand washing alone was sufficient to bring Airport Sand & Gravel Co.'s products up to required standards. But since relocating near a new, larger deposit contaminated with coal and carbonaceous material, the northeastern Pennsylvania firm is relying on a pair of Remer jigs to do the upgrading chore on sand.

Airport Sand & Gravel, owned by Joe Sgarlat and operated by his sons, Sam and Frank, has been supplying the Wilkes Barre-Scranton area with quality sand and gravel products for more than 18 years. When they built a washing plant in the spring of 1949, it was described in the pages of ROCK PRODUCTS (November 1949). Their plant, turning out 100 tph. of raw feed, was an example for producers planning to set up an efficient small-capacity operation.

The old deposit became depleted. In their search for a new one the Sgarlats learned that good ones were hard to find at the right place, so they looked at lower-grade deposits with careful consideration of beneficiation possibilities. The one they chose was most attractive as far as size and distance were concerned—it contains several million tons and is only a couple of miles from the old plant.

Deleterious particles amount to about three percent by weight of the original material. To meet state specifications, this must be reduced to less than one percent in the concrete sand product. Also, to satisfy some of their customers, they must remove practically all of the black particles from the masonry sand to prevent streaking in the final product.

Please turn page

*Professor and Head, Department of Mineral Preparation, The Pennsylvania State University, University Park, Pa.

IT TAKES A PAIR OF JIGS to do the best job of removing coal from the flow of sand

HOW JIGS SOLVE A COAL PROBLEM

continued from page 95

The search for a suitable beneficiation method involved much more travel. It appeared that gravity methods could be used because the coal and carbonaceous material have specific gravities less than 1.70; desirable sand particles, greater than 2.40. Sam and Frank Sgarlat made many trips around the country to see different types of equipment in action.

From their observations, the Sgarlats selected a jig. Although they saw shale removed from sand, they did not see any coal-removing operations. In this respect, their operation is unusual. To make sure their selection was right, they sent samples of raw material to the equipment company laboratory for testing. Results were satisfactory and a final decision was made on this evidence.

Only one jig was installed at first. The plant flowsheet was devised to include the jig and, at the same time, to use as much as possible of the existing equipment. The jig simply was inserted in the flowsheet to clean the minus 3/16-in. slurry from the original sizing screen. The crushers were rearranged, however, to take advantage of gravity flow.

The revised plant was put into operation in May 1959 to start processing the new deposit. Shortly after operations were under way, the Sgarlats discovered that the size gradation of the deposit was somewhat different than their estimate, overloading the jig. Removal of coal particles in the jig-processed material was quite satisfactory, however, so they decided to install the second jig. That installation was completed in October 1959, and the plant has been operating satisfactorily in good weather ever since.

The first jig could handle up to 30 tph. of feed, but the amount of minus 3/16-in. sand in the new deposit was about 50 percent of the feed, or about 50 tph. Now each jig is handling about 25 tph., and the minus 3/16-in. slurry is divided into two parts in the launder ahead of the jigs.

This type of jig has been described previously in ROCK PRODUCTS. (See November 1958 issue, p. 96). These jigs are a variation of the ordinary jigging process that sends pulsating currents of water through a bed of particles, since they use a feature called "differential acceleration." In all commercial jigging processes, pulsation causes the particles to stratify according to their specific gravities—light ones on top and heavy ones on the bottom.

Differential acceleration, which distinguishes this particular jig from others, is caused by two eccentrics connected onto two separate shafts (A and B in the jig diagram). These shafts rotate at different speeds and with different length strokes. One operates at 60 rpm. with a $\frac{3}{8}$-in stroke, and the other at 400 rpm. with a 1/16-in. stroke. The combination of the two accounts for the stratification of particles over a wide bed area with no dead spots. Light coal particles flow into a reject launder from the top of the bed, and the sand is re-

LEFT: Piles of cleaned, finished sand surround the new plant with its jigs in the tower

RIGHT: Each of the two eccentric shafts rotates at a different speed and at a different length stroke to give better separation of light and heavy particles

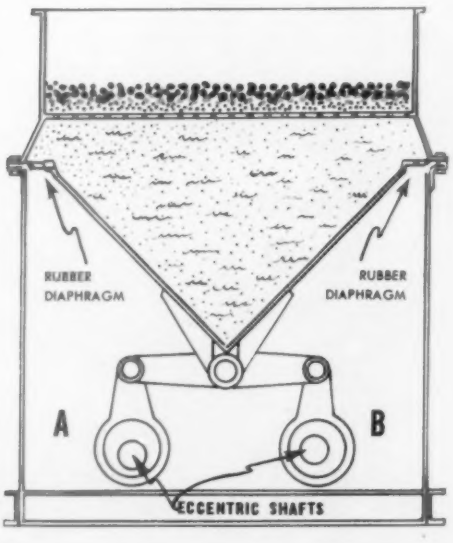
moved from the hutches in the bottom of the jig, as well as from the end of the unit after the coal has been removed.

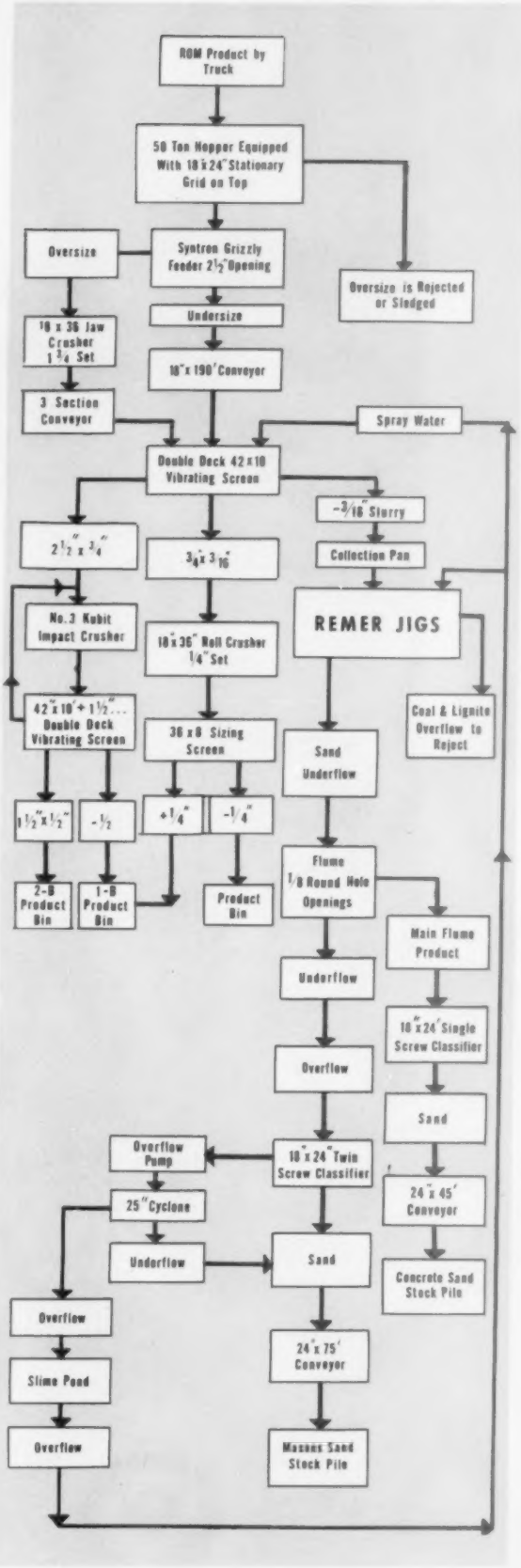
The flowsheet shows that the overflow from the slime pond is recirculated to the plant. This is done in two water lines—a 6-in. line which carries about 800 gpm. to the original double-deck vibrating screen, and a 4-in. line which supplies the two jigs with about 500 gpm. This water is introduced into the jigs below the punched plate screen deck. The balance of water used by the jigs is the wash water from the above-mentioned, double-deck vibrating screen. This water carries the minus 3/16-in. feed particles into the jigs.

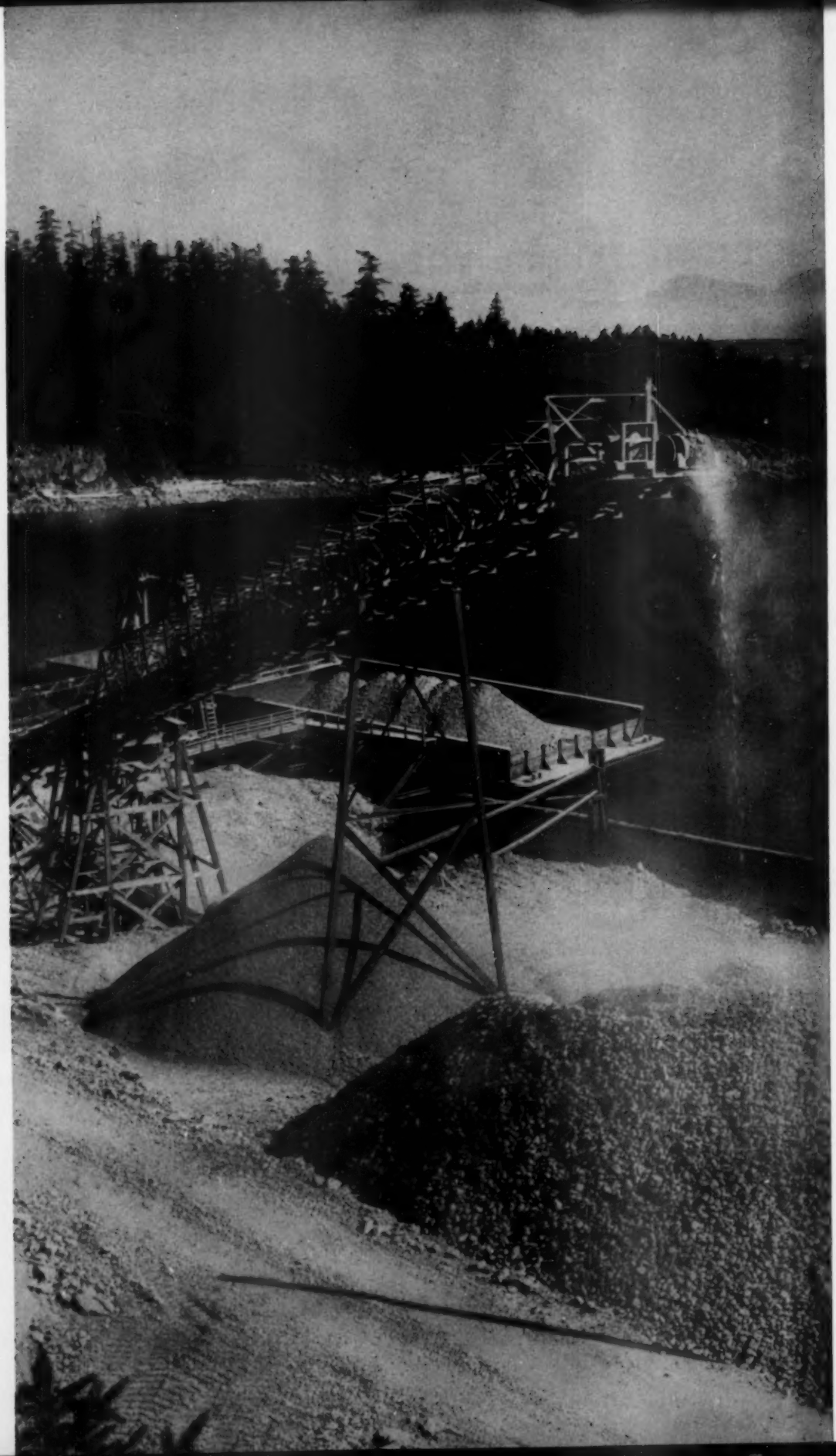
Water leaves the jigs at three places: through the hutch openings in the bottom, over the sand overflow at the end and in the launder that removes the light reject coal particles. The hutch water discharge with its sand, and the end-overflow water with its sand, are combined in the flume leading to the screw classifiers that separate the final sand products from the water.

Airport Sand & Gravel Co.'s case history clearly illustrates the growing importance of mineral beneficiation to the sand and gravel industry. Stricter specifications and utilization of lower-grade deposits are factors that will make beneficiation of even greater importance. **END**

MAJOR EQUIPMENT REFERENCE: Remer jigs in this installation were manufactured by Western Machinery Co.







Selling high-grade limestone to multi-industry markets, Ideal's Texada Island plant has a potential that is hard to beat

Dream deposit excites wide-awake planning

by Ralph S. Torgerson

IT WOULD BE HARD TO FIND A FINER DEPOSIT of high-grade limestone than at the Texada Island, B.C., quarry of Ideal Cement Co. Ltd. One of Canada's largest deposits and suitable for multi-industry purposes, it's the answer to a limestone producer's dream. But this active, wide-awake subsidiary of Ideal Cement isn't dreaming. Since acquiring the quarry it has invested $400,000 in plant modernization. Realistic planning is geared to today's and tomorrow's needs—now selling to outside industries, the company expects ultimately to use the stone in cement manufacture.

Texada Island lies northwest of Vancouver in the Strait of Georgia, where there is an abundance of natural resources, plentiful timber supplies and access to Pacific shipping lanes. All these things stamp this enterprise with distinguishing characteristics. For example, there is extensive use of wood construction throughout the plant, and the flow of material is directed through a well-integrated conveyor system to barge-loading facilities in Marble Bay. A feature of the latter is a pivoting boom which allows the conveyor to raise and lower according to the condition of the tides.

Markets currently are found for this high-calcium limestone in the pulp and paper, ferrous and nonferrous smelter and rock wool industries. And, as it is a hard, dense stone, it would be suitable for road aggregates. A typical chemical analysis of the stone reveals these percentages: SiO_2—0.16; Al_2O_3—0.46; Fe_2O_3—0.06; CaO—55.28; MgO—0.27; S—0.012; P—0.001; Ign. loss—43.69; Carbon—0.04, and Acid insoluble—0.28.

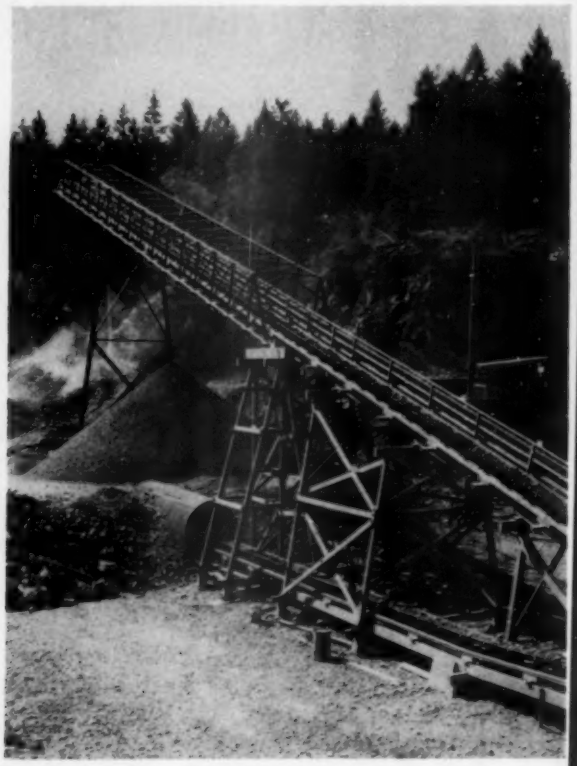
Please turn page

LEFT: Well-integrated conveyor system takes high-calcium limestone to the barge-loading facilities in Marble Bay. Here, stockpiling conveyor discharges stone to one of the two piles that feed to a reclaim tunnel for barge loading

RIGHT: An unusual feature of Ideal's Texada Island plant is this loading boom conveyor that accommodates itself to tide conditions. This boom can be moved from 4 deg. below horizontal to 16 deg. above, depending on the 16-ft. tide differential. Note the plentiful use of timber in the conveyor structure

STONE travels up a 36-in. belt conveyor to the screening station

RECLAIM TUNNEL at lower left holds a two-speed conveyor that loads barges at a 250 or 500-tph. rate



VERY LITTLE OVERBURDEN is discernible in this view of the quarry where a shovel is engaged in loading one of the plant's two trucks

DREAM DEPOSIT EXCITES WIDE-AWAKE PLANNING

continued from page 99

Besides being well endowed, the deposit is comparatively easy to quarry. Overburden, once trees and bush are leveled, is light and readily removed with a bulldozer-equipped tractor. Primary blasting usually is sufficient to provide excellent fragmentation; secondary blasting is seldom required.

Drilling follows a pattern of 10-ft. burden and 9-ft. spacing. Using carbide insert bits, the tractor-mounted drill puts down 2¾-in. diam. holes to an average depth of 50 ft. Highly satisfactory results are obtained with ammonium nitrate explosives and simultaneous detonation; however, millisecond caps are used occasionally.

Stone is moved from quarry to plant, three miles distant, by trucks which are loaded by a diesel-powered shovel. Although they may dump to a quarry-run sump stockpile, normally the trucks go directly to the plant.

A traveling bar feeder, somewhat unusual in an operation of this kind, is performing successfully in feeding stone from the truck dump hopper over a 14-in. grizzly to a 30 x 42-in. jaw crusher. Coming from the crusher at a 250-tph. rate, stone is taken by belt conveyor to the secondary crushing and screening area. There is no secondary crusher in use presently, but one will be installed later.

These routes are taken by products from the 3-deck screen: All feed onto conveyors with through-screen material from the two upper decks, ¾ to 1½-in. and 1½ to 6-in. stone, respectively, discharging to stockpiles over a reclaim tunnel near the dock. Plus 6-in. oversize from the top deck goes to a tunnel belt conveyor for direct loading into barges, and throughs from the bottom deck are wasted or diverted to the 1½ x 6-in. stockpile. This minus ¾-in. material also may be used for the company's road construction work.

Altogether, 15,000 tons normally are stored over the reclaim tunnel, 5,000 tons of the smaller size, and 10,000 tons of the larger. To reclaim materials from the stockpiles, a 2-speed conveyor operates beneath them in an 8½-ft. diam. tunnel. It operates at rates of 250 or 500 tph., withdrawing material through four gates and moving it to the barge-loading belt conveyor.

The unusual feature about the barge-loading conveyor, as mentioned earlier, is its pivoted boom to compensate for varying tide levels. Its discharge end may be raised or lowered approximately 12 ft. Rubber serves to cushion this conveyor from severe loading conditions: there are rubber-tread troughing idlers at the transfer point and 6-in. diam. standard steel troughing idlers on the remainder. On the other conveyors where loading conditions are not so severe, 5-in. diam. troughing idlers are used. All transfer points, however, are protected by rubber-tread impact idlers.

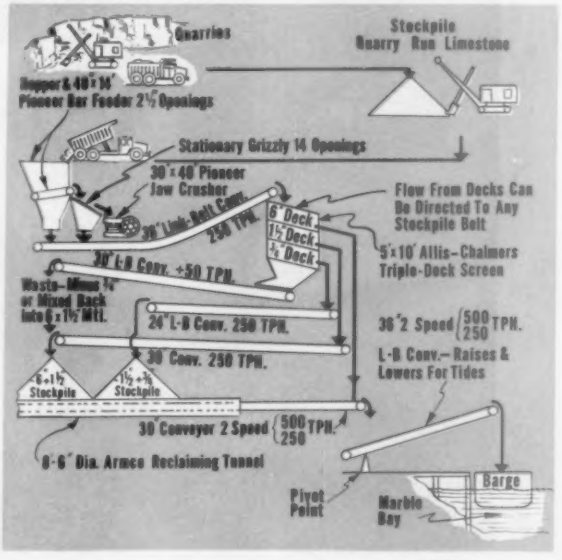
As much as 500 tph. can be loaded into the barges, each of which may hold from 3,000 to 4,000 tons. Barge transportation is handled under contract, with ocean-going tugs hauling two barges in tandem.

Wherever possible, wooden bents support the conveyor system. These structures were built by company construction crews. Plant design was by Val Gwyther and Co., Ltd., Vancouver, B.C.; its operation is under W. Stanley Beale, manager of Ideal Cement Co., Ltd.'s Rock Products Division.

END

MAJOR EQUIPMENT REFERENCE

QUARRY:	
Shovel, 1¾-cu. yd.	Marion Power Shovel Co.
Diesel engine for shovel	Detroit Diesel Engine Div. GMC
Compressor, 600 cfm.	Ingersoll-Rand Co.
Drill, 4-in. diam.	Gardner-Denver Co.
Bits	Timken-Detroit Axle Div., Rockwell-Standard Corp.
Trucks, 10 and 12-cu. yd. (2)	Mack Trucks, Inc.
PLANT:	
Tractor and bulldozer	Caterpillar Tractor Co.
Crusher, 30 x 42-in.	Pioneer Engineering
Screen, 5 x 10-ft., triple-deck	Allis-Chalmers Mfg. Co.
Conveyors	Link-Belt Ltd.
Front-end loader	Clark Equipment Co.
Electrical system	Canadian Westinghouse Ltd.


Quarries
Stockpile
Quarry Run Limestone
Hopper & 40' x 14' Pioneer Bar Feeder 2½ Openings
Stationary Grizzly 14 Openings
30" x 40" Pioneer Jaw Crusher
30" Link-Belt Conv. 250 TPH.
6" Deck
1½" Deck
¾" Deck
Flow From Decks Can Be Directed To Any Stockpile Belt
5' x 10' Allis-Chalmers Triple-Deck Screen
30" L-B Conv. ±50 TPH.
Waste—Minus ¼" or Mixed Back into 6" x 1½" Mtl.
24" L-B Conv. 250 TPH.
36" 2 Speed 500/250 TPH.
30" Conv. 250 TPH.
L-B Conv.—Raises & Lowers For Tides
6"x1½" Stockpile
1½"x¾" Stockpile
30 Conveyor 2 Speed 500/250 TPH.
8'-6" Dia. Armco Reclaiming Tunnel
Pivot Point
Barge
Marble Bay

Cement production skyrockets in Soviet Russia

by Bo Nikander*

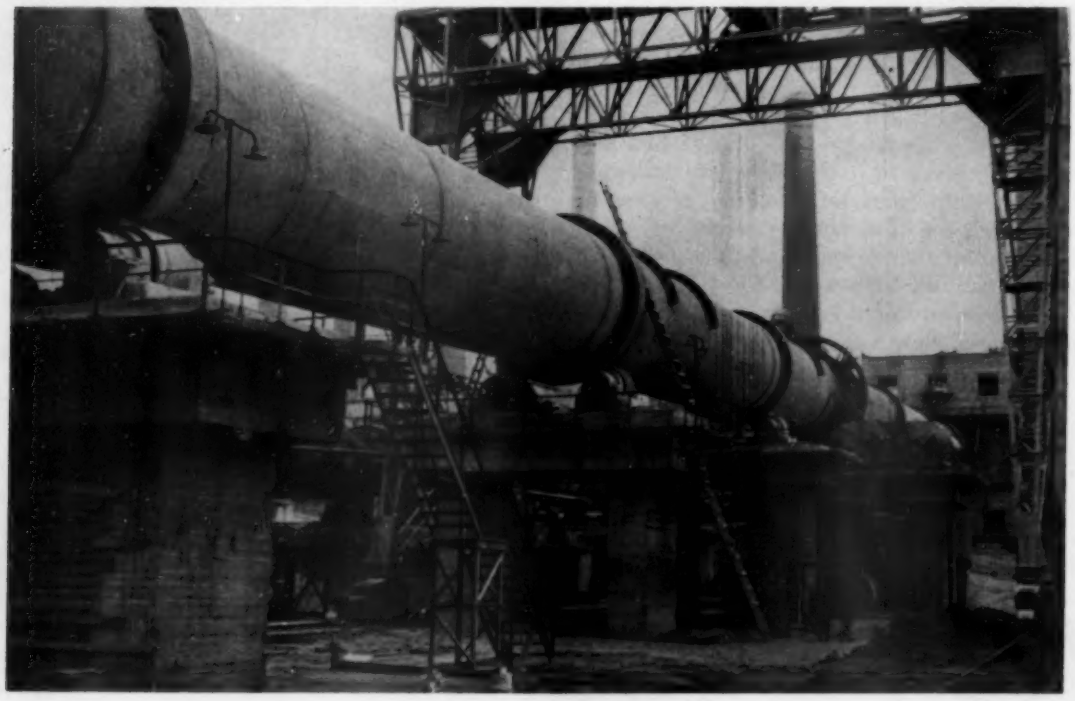
TREMENDOUS INDUSTRIAL GROWTH, particularly in the cement industry, is evident to the traveler in Russia. It bears out the intention of the Soviet Union to produce 440 million bbl. annually by 1965, as outlined in its present 7-year plan. By that time, Russians calculate, America will be producing about 393 million bbl. As far as cement is concerned, Russia expects to surpass the USA in industrial production.

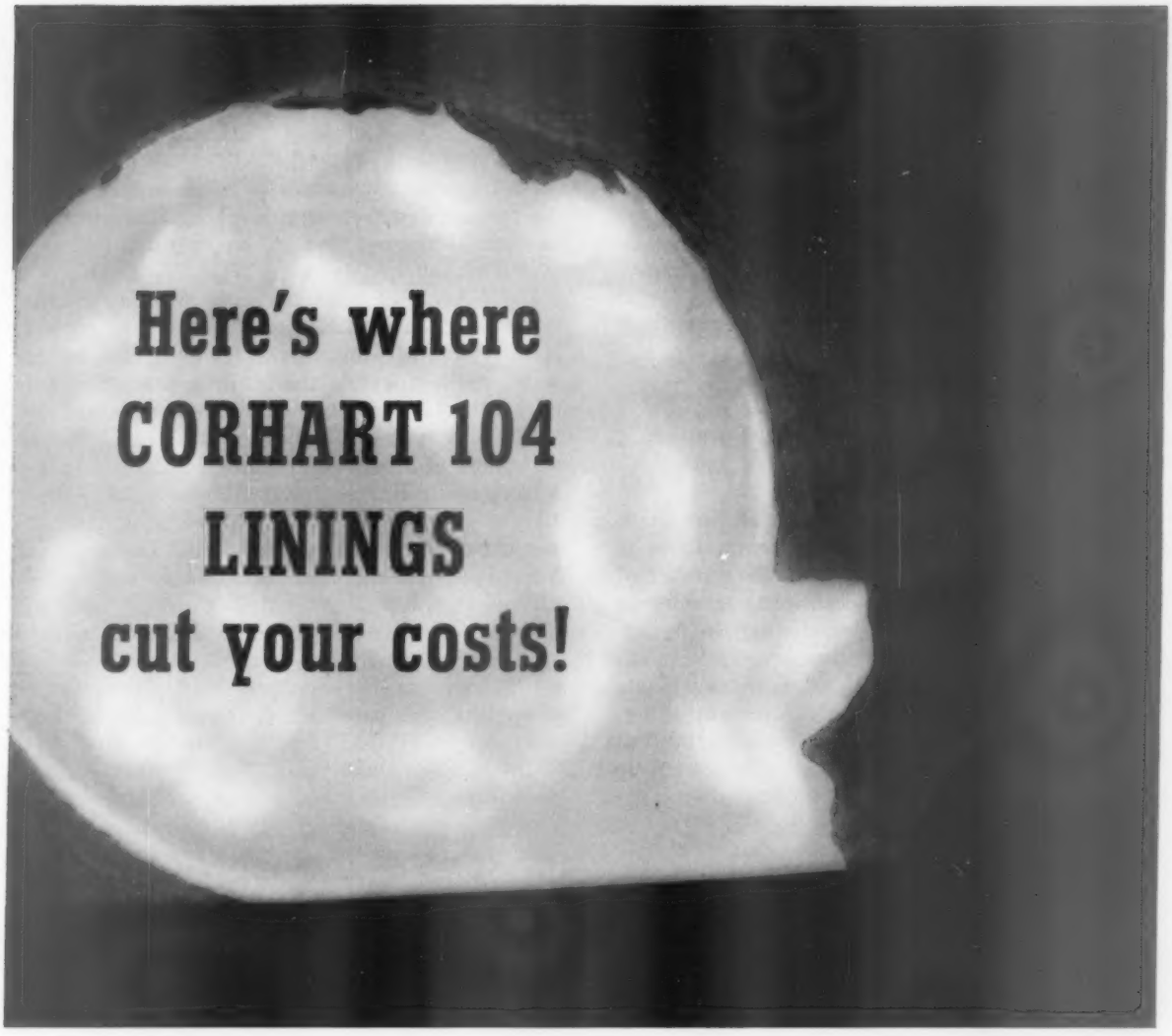
When I visited Russia last October with a group of Finnish cement plant superintendents, the rapid pace of development since the war was immediately apparent. Cement production, which was only 8.2 million bbl. annually in 1945 when half the country's plants were demolished, had skyrocketed. By 1950 it had reached 60 million bbl., with 55 plants in operation. Each year since then production has risen about 16.5 percent, which considerably exceeds development both in Western Europe and the United States during the same period. In 1959, cement production figures were

Please turn to page 104

Cement Works of Pargas, Finland

THE BELGOROD CEMENT PLANT has five kilns (photo shows one during installation), produces about 2,900 bbl. per day





CORHART 104 is *much more* than just another conventional basic refractory, and the process by which this ELECTROCAST* refractory is manufactured makes the difference!

The special manufacturing process produces a high-density refractory brick that withstands the torturous heat and abrasive wear in hot zones *far longer* than conventional basic liners.

As a result, record campaigns have been recorded in every Corhart 104 hot zone installation ever made. Repeat installations of equal or greater area have followed every initial installation, and for these good reasons:

- Corhart linings substantially increase hot zone life. In all installations, hot zone life was at least *doubled* compared to commonly used conventional basic refractories.
- Corhart linings take *excellent clinker coatings* quickly and without inducement.
- Corhart 104 linings behave similarly to other basic products in respect to heat loss and fuel efficiency.

Send now for our new full-color ELECTROCAST brochure describing in detail the many advantages of BALANCED LININGS* with Corhart 104. Corhart Refractories Company, Incorporated, 944 Commonwealth Building, Louisville 2, Kentucky. Telephone—JUniper 5-4201.

**Trade Mark.*

CORHART PROVES IT 1 IN THE HOT SPOTS!

QUALITY ECONOMY ENDURANCE

CORHART REFRACTORIES COMPANY

Subsidiary of Corning Glass Works

The words "Corhart", "ZAC", and "Electrocast" are registered trade marks which indicate manufacture by Corhart Refractories Company, Incorporated.

Enter 1296 on Reader Card

CEMENT PRODUCTION SKYROCKETS IN SOVIET RUSSIA

continued from page 102

expected to reach 229 million bbl., or 419 lb. per capita.

The following table shows biennial increases over an 8-yr. period, according to Soviet officials:

	Million bbl.	Lb. per capita
1950	60	110
1952	83	154
1954	111	205
1956	144	273
1958	195	359

The figures for the lb. per capita are not quite accurate because, for the earlier years, there is no reliable information concerning the number of inhabitants in Russia. An occasional traveler in the Soviet Union cannot judge whether the figures stated for industrial production are correct, but he can see with his own eyes that many new plants for construction materials, such as cement, asbestos cement and precast concrete, are being built at a rapid rate. The plants that I visited were put up during the last few years, and all were on a large scale.

I visited two modern cement plants on my trip to the Soviet Union. Both were designed to produce about 6 million bbl. per year. This quantity, however, includes about 15 to 20 percent blast-furnace slag which, according to Soviet standards, may be mixed into ordinary portland cement during grinding. These plants were built in the fifties and are wholly on a Western European level.

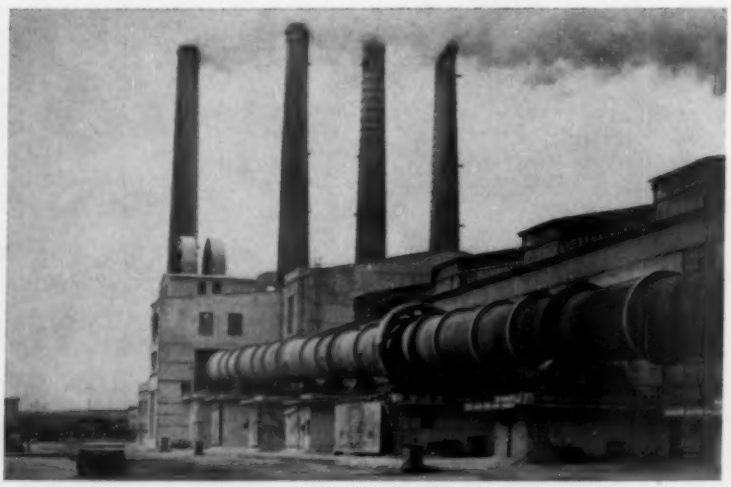
All important machines were manufactured by the former Krupp-Gruson Werk at Magdeburg in Eastern Germany. One of the plants, Belgorod near Kharkov, had five kilns producing about 2,900 bbl. per day. The kilns are quite ordinary riveted types provided with Krupp's "Koncentra" coolers. It is typical of kilns in the Soviet Union to use water cooling outside the burning zone; this permits a thicker protective coating and saves linings.

The raw material in both plants that I visited was chalk of a very good quality, and clay. To get a more easily sintering material and better formation of protective coating on the lining, 2 to 2.5 percent of iron oxide is added at the raw grinding. Very hard burning was employed to reduce free CaO to less than .5 percent. Because of the chalk and the large quantity of clay, the water content was relatively high—41 percent at Belgorod and 38 percent at Serebriakov. Heat consumption, therefore, was comparatively large: about 1,600 kcal. per kg. clinker (1 million Btu. per bbl.)

In the Serebriakov plant near Stalingrad, there were four kilns identical to those at Belgorod. Production here was about 3,500 bbl. per day. Both plants were well designed and made a favorable impression. Russian journals refer to them as two of its most modern plants.

A striking feature was the great number of engineers and the relatively great number of workers. For example, the Serebriakov plant, which also comprised a power station, employed 29 engineers, about 30 foremen, and about 800 workers, of which 20 to 25 percent were women. The num-

Please turn to page 106



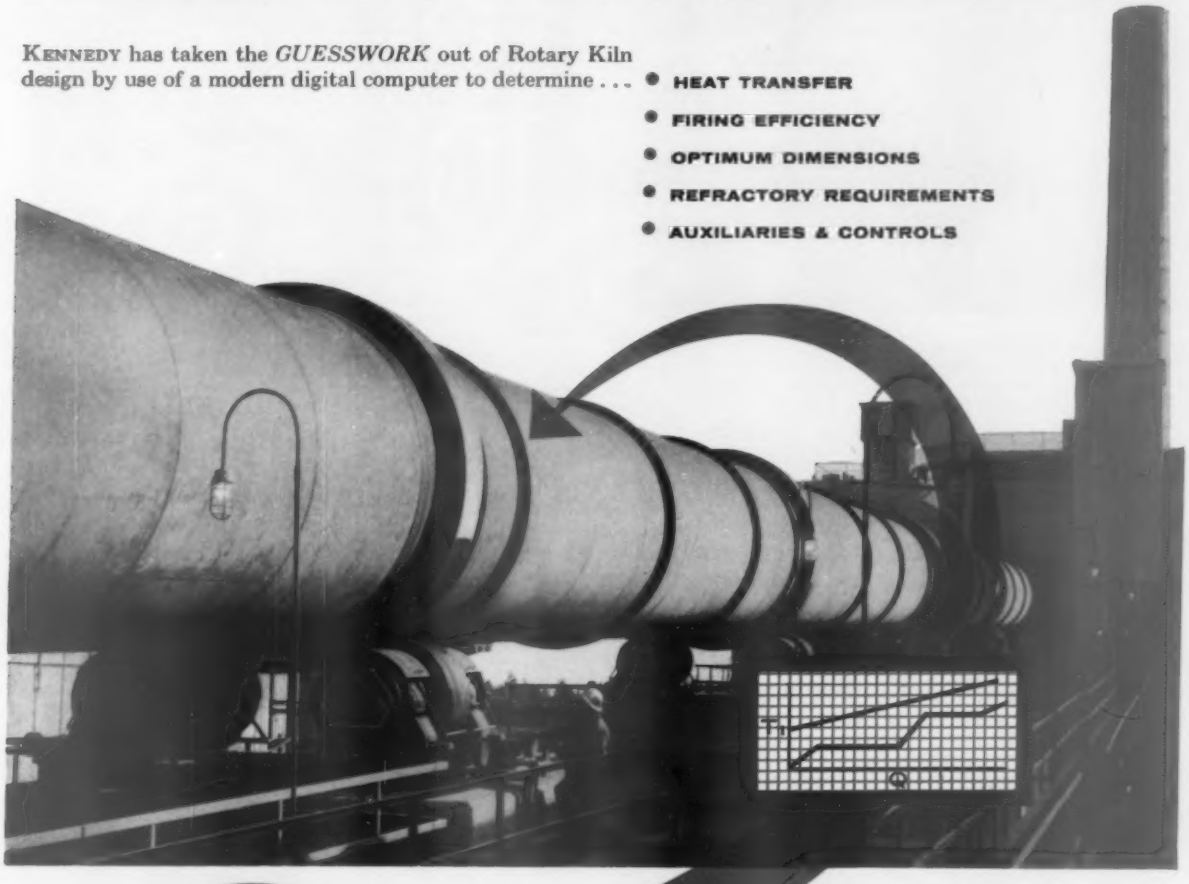
SMOKE PLUMES wreath the stacks at the Serebriakov cement plant, another operation visited by the author on his Russian trip

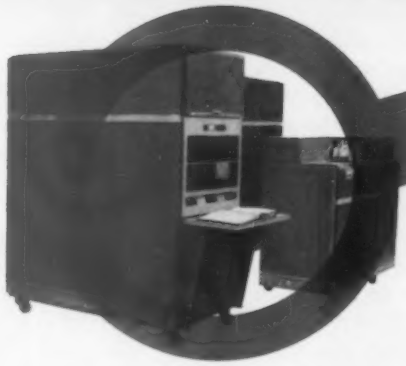
Another reason for the superiority of

KENNEDY ROTARY KILNS

KENNEDY has taken the *GUESSWORK* out of Rotary Kiln design by use of a modern digital computer to determine . . .

- HEAT TRANSFER
- FIRING EFFICIENCY
- OPTIMUM DIMENSIONS
- REFRACTORY REQUIREMENTS
- AUXILIARIES & CONTROLS





IBM 650 Data Processing System used by KENNEDY Engineers for Rotary Kiln Calculations.

KENNEDY takes the *more than 100 variables* in a kiln operation and in less than an hour solves the basic equations necessary to determine optimum design.

KENNEDY's already established reputation in kilns for . . .

- Lime, dolomite & magnesite burning
- Cement, wet or dry process
- Ore nodulizing
- Coke calcining

. . . is further enhanced by this new, more scientific approach.

KENNEDY VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

405 PARK AVENUE, NEW YORK 22, N.Y. • FACTORY: DANVILLE, PA.

Primary & Secondary Gyratory Crushers • Jaw Crushers • Roll Crushers • Impact Breakers • Hammer Mills • Rod & Ball Mills • Kilns & Kilns Accessories • Dryers • Scrubbers • Screens • Pneumatic & Mechanical Conveyors • Complete Crushing, Lime, Cement & Carbon Paste Plants. Research & Testing Service.

Enter 1229 on Reader Card

CEMENT PRODUCTION SKYROCKETS IN SOVIET RUSSIA

continued from page 104

THIS BUILDING houses Yuzhgiprotsement, one of three institutes that direct activities of the Russian cement industry. There is a research department here, but its activities are secondary to planning and design of new plants

ber of clerks, on the other hand, was surprisingly small. Various departments—quarry, raw mill, kiln, cement mill and maintenance—have 2 to 5 engineers each. The engineers work in shifts, and the work week generally comprises 40 hours.

Russian strides toward cement industry expansion were outlined by Nikita Khrushchev at the 21st congress of the Communist Party. In presenting his new 7-year (1959-1965) plan, he placed the annual production goal for 1965 at 440 million bbl., which I mentioned earlier.

To bring about this colossal increase in production from 195 million bbl. in 1958 to 440 million in 1965, 32 new plants will be built, 12 of them in Asia. In addition, a large number of old plants will be modernized. G. G. Bielov dealt with the question in the Russian journal Tsement (January 1959).

Expansion of older plants will account for about 15 percent of the projected increase. Here is a breakdown showing how it will be realized: (1) 4 percent by the installation of concentrators and cyclone preheaters in existing kilns; (2) 2 to 3 percent by changing the clay component in the raw slurry against blast-furnace slag; (3) 3 percent by the addition of mineralizers—for instance, Na_2SiF_6—to the raw slurry; (4) 3 to 4 percent by returning the dust from electrical precipitators together with the fuel in gas-fired kilns; (5) 2 percent by utilizing the waste from apatite plants (nepheline slurry) as raw material.

Because so many new plants will be built, standard projects have been worked out, depending on size, raw materials and other factors. About 85 percent of them will use the wet process, and a maximum of 15 percent the dry process. In principle, the dry process is used only where moisture of the raw materials is below 10 percent. To facilitate manufacture, kilns and all other machinery in the plants will be as standardized as they can be in this type of economy. Kilns of the following types will be manufactured:

(1) Wet process, 13 x 492 ft., 5,000 bbl. per day.

(2) Wet process, 14.8 x 558 ft., 7,000 bbl. per day.

(3) Wet process, 16.4 x 607 ft., 10,500 bbl. per day.

(4) Dry process, Lepol type, 14.8 x 197 ft., 7,000 bbl. per day.

Kilns in the new plants will be fired with natural gas, as a rule. It is calculated that in 1965 about 75 percent of cement production in Russia will be based on natural gas, large deposits of which were discovered during the fifties. All cement kilns will be provided with Cottrell precipitators.

Other standardized machinery will include 10.5 x 49-ft. cement mills provided with 1,800-kw. motors for the grinding of 293 to 352 bbl. per hr. The cement mills usually are run in open circuit only; in special cases, the kilns will be provided with separators.

What strikes a traveler in the Soviet Union is the large number of cements defined in the standards. There are 20 different types divided into more than 60 subclasses. Besides the types defined in ASTM standards, there are also magnesia portland cement, white cement, puzzolano cement, various types of slag cement, aluminate cement, etc. A large number of subclasses arise from the fact that the more important types are classed according to strength. For instance, ordinary portland cement is divided into the strength classes 200, 250, 300, 400, 500 and 600 kg. per cm.

This division of strengths into so many classes is probably a result of production norms that compelled plants to produce a certain quantity a year. To get all the cement produced accepted for sale, it was divided into classes each with very low strength. As is well known, the production norms are an important standard for all industrial activity in Russia, and they must be fulfilled very strictly in order to avoid trouble both for management and workers. In the plants I visited, however, I was told that normally they produced cement only of the two or three highest classes.

Please turn to page 108

ALLIS-CHALMERS

Processing plant control installation, designed by Allis-Chalmers, provides coordinated high voltage control of conveyors, ball mills, rod mills, crushers, pumps, and fans.

Get the hidden extra

that means motor control matched to your processing system

Allis-Chalmers is the only control manufacturer that also makes motors and heavy processing machinery such as grinding mills, crushers and screens. This intimate knowledge of motors and driven equipment is important to you. This is an extra benefit that assures you of control fully coordinated with other system components. It means fewer installation and engineering headaches . . . better overall plant performance.

Allis-Chalmers offers a complete line of low and high voltage control for all your synchronous, wound-rotor and squirrel-cage motors. Featuring heavy-duty, rollout air-break contactors for easy accessibility and maintenance, they take in stride the severe duty of repetitive starting, reversing, plugging and inching.

You get high interrupting capacity in small space. Current-limiting fuses reduce mechanical and thermal stresses on the entire system, and short circuits are cleared in less than ½ cycle. For synchronous motors, complete field protection is provided at the proper time in the cycle by automatic polarized field-frequency, field-application relay.

For more information, call your nearby A-C sales office. Or write ***Allis-Chalmers,*** *Industrial Equipment Division, Milwaukee 1, Wisconsin.*

A-1288

Enter 1228 on Reader Card

CEMENT PRODUCTION SKYROCKETS IN SOVIET RUSSIA

continued from page 106

The standardization of such an immense number of cements seems to be a consequence of a certain overvaluation of the purely theoretical points of view, which can often be observed in the Russia of today.

In Russia, the state is responsible for all development and has set up institutes to direct the activities of various branches of industry. There are more than 90 such institutes in Moscow alone. For the cement industry, there are three institutes, one in Moscow, Leningrad and Kharkov. Each has branch offices in Asia.

The oldest of the cement institutes is Giprotsement at Leningrad. This projection institute was founded as early as 1927. Next, there is the pure research institute, Niitsement, in Moscow, founded in 1948. Finally, there is the projection and research institute, Yuzhgiprotsement, at Kharkov. The latter began as a subdepartment to Giprotsement but became independent in 1950.

This organization chart of Giprotsement shows how the institutes are set up.

Director
Vice director in charge of the administrative department
Vice director in charge of the projection department
Vice director in charge of the research department
Secretariate

The institute is divided into five departments:

A. Department for preliminary projection (80 persons)
This department deals with the localization of new plants, market research, ground investigation and preliminary projection. Geological investigation is carried out by the state geological research institute.

B. Projection department (550 persons)
1. Technological department
2. Building department
3. Electric department
4. Department for materials handling
5. Department for water and ventilation, etc.
6. Thermotechnical department
7. Department for mechanical construction
8. Department for economic investigation

C. Research department (200 persons)
1. Technological department
2. Thermotechnical department
3. Chemical laboratory
4. Petrographical department
5. Strength laboratory
6. Automatization department
7. Lining materials laboratory
8. Grinding department
9. Dust extraction department
10. Pilot plant, workshop
11. Department for technical information and publication
This department also follows the foreign literature and translates all important papers into Russian.

D. Starting-up department (250 persons)
This department is situated in Moscow and sends out experts for the starting up and running in of new works.

E. Branch department at Novosibirsk (200 persons)
This is a pure projection department for factories in Siberia.

The total number of employes is stated to be 1,300, of which 60 percent are women. Of the employes with higher technical schooling, 35 to 40 percent are women.

The institutes design cement plants in every detail—for instance, electric equipment, heat and ventilation. Earlier most of the machinery came from Eastern Germany, but for some years machinery has been built in Russia as well. The Russian machine industry has proved qualified in mass production of cars and tanks, and lately it has evidently developed to such a degree that it produces special machinery.

Since Mr. Khrushchev's industrial reform in 1957, when the industrial enterprises of the whole union were divided into 102 districts (sovnarkhozes), the central authorities no longer have the direct operative responsibility for the industrial production.

Besides working out projects, the institutes are also charged to act as consultants for plants all over the country. All the plants are divided between Giprotsement and Yuzhgiprotsement. The institutes appeared to be quite independent of each other, but to spare time there is a distribution of work. Thus, the projection of new kiln types is done by Yuzhgiprotsement.

Niitsement is a pure research institute employing about 600 persons. It has the most complete pilot plant of all the institutes and a large practical department with mills for dry and wet grinding. It also has three different pilot kilns, the largest of which is 4 x 52 ft.

All the institutes had research departments of the same type as Giprotsement, but that of Niitsement was 2 or 3 times larger than the others. The work was devoted to the problems that are of immediate interest to the cement industry all over the world: how to improve test methods and apparatus, which clinker qualities are important, automation, new burning and grinding methods, etc. An interesting idea is an "electrical ear" for cement mills, based on frequency and not on strength (amplitude) of sound.

By far the most important problem in the cement industry of the USSR seems to be how to produce sufficiently large quantities. Activity in the institutes is to a large extent concentrated on this question, whereas pure research comes second. This does not mean, however, that we cannot expect many important contributions to the development in the cement field from the Russians, when they get time to concentrate on many of these questions. **END**

ALLIS-CHALMERS

One-man, one-minute product control on these

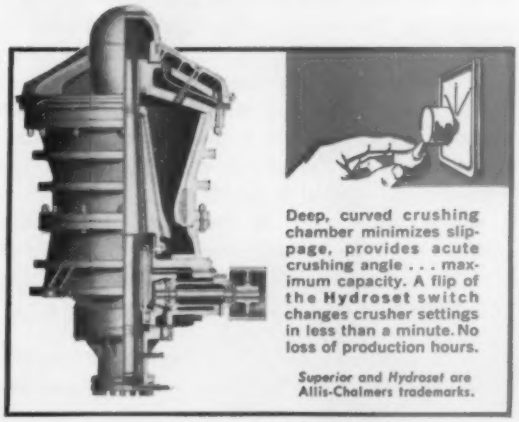
brawny boulder busters!

***Hydroset* mechanism keys *Superior* crusher performance.** For crushing the hardest materials — year in, year out — *Superior* crushers have strength where it counts. They lead the field in dependability and continuous service and, at the same time, give you high capacity and low operating costs.

Best yet, these rock-rugged crushers do it with a flip of the switch. With *Hydroset* mechanism, it takes one man less than one minute for complete product control. This exclusive mechanism compensates for wear, retains initial setting or changes settings in less than 60 seconds. Clears jams just as easily. Slashes downtime and maintenance costs to the bone.

You'll see all the top-profit advantages in Bulletin 07B7870A. For your copy, call your A-C representative or write **Allis-Chalmers,** *Industrial Equipment Division, Milwaukee 1, Wisconsin.*

A-1329



Deep, curved crushing chamber minimizes slippage, provides acute crushing angle . . . maximum capacity. A flip of the **Hydroset** switch changes crusher settings in less than a minute. No loss of production hours.

Superior and *Hydroset* are Allis-Chalmers trademarks.

Enter 1227 on Reader Card

Mineral wool from volcanic ash?*

by Dr. Maynard P. Bauleke†

YOU NEED NOT DIG VERY DEEP nor look very far to find a potential raw material for mineral (rock) wool. Millions of tons of volcanic rock, a naturally occurring glass, exist in commercial quantities in our western states. Chemically, it is similar to common glass wool. Physically, it can be formed into the same kind of fibers, but the process is different.

We have conducted research into the nature and possibilities of volcanic ash at the Kansas Geological Survey. Our physical data and chemical analyses indicate that volcanic ash, with possible small addition of limestone, will produce a satisfactory mineral wool.

Exploitation of deposits throughout the West—in Kansas, Nebraska, Oklahoma, Texas, Colorado, Montana, Oregon and California—and in British Columbia and Saskatchewan in Canada, is foreseeable as the center of population moves westward. Many deposits are located in areas of abundant fuel supply, and near transportation.

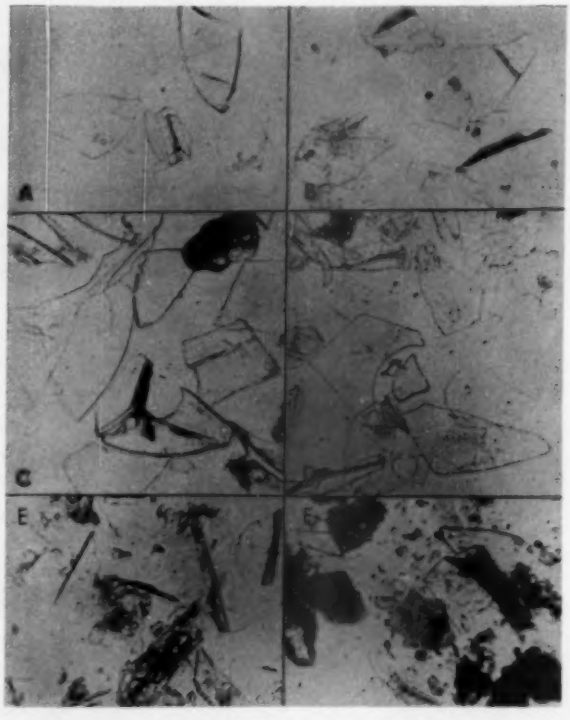
For the average and range of chemical compositions of several Kansas volcanic ashes, see Table 1. Comparison of the above with that of a typical common glass wool is provided by Table 2.

When the mixing of the glass-forming oxides into a glass has already been done in the raw materials by nature, all that remains to be done is the reshaping of the glass particles into long thin fibers. More nearly uniform mineral wool fiber composition and physical properties are usually obtained.

Two properties of Kansas volcanic ash determine the process by which it can be transformed into

Please turn to page 112

ELECTRON MICROGRAPH of Kansas volcanic ash shards from a minus-1-micron fraction. Note the curvature and angularity of the glass. At one time, many abrasive cleaners contained volcanic ash. (Magnification 25,000X)



PHOTOMICROGRAPHS of typical Kansas volcanic ash shards (88-125 micron fraction, 170-120 mesh) mounted in 1.640 index liquid under plane polarized light. Notice the angularity and lack of sphericity. (Magnification, 250X)

*Publication authorized by Director, State Geological Survey of Kansas

†Ceramic Engineer, Ceramics Div., University of Kansas, State Geological Survey, Lawrence, Kan.

Enter 1214 on Reader Card

PUT IT HERE!

and load out as never before

OLIVER 778 LOADER

with REVERSE O TORC

It's rated ¾-yd. at the bucket. But that's only the half of it.

The fast-action Oliver 778 loader has a loading speed that upgrades production comparable to larger, far more expensive loaders.

Oliver "Reverse-O-Torc" puts instantaneous forward-reverse action under finger-tip control of the operator—*entirely minus conventional clutching!* It's so easy: full-force crowding into the bank with smooth torque converter power...a flick of the finger for fast back-away and dumping...then "flick," right back for another heaping load. Big, steady, low-cost production.

By all means, get the full facts on the Oliver 778 before you buy any loader—even larger. Choice of 50-plus horsepower gasoline or diesel engine. See your helpful Oliver distributor.

LOOK TO OLIVER FOR YOUR BEST BUY IN WHEEL AND CRAWLER TRACTORS

THE OLIVER CORPORATION

Dept. 2232, 400 W. Madison St., Chicago 6, Illinois

MINERAL WOOL FROM VOLCANIC ASH?

continued from page 110

TABLE 1.
Chemical analysis; average and ranges for 54 Kansas volcanic ash samples

Oxide	Average (percent)	Range (percent)
SiO_2	72.3	60-74
Al_2O_3	11.8	9-13
Fe_2O_3	1.7	1-3
TiO_2	0.5	0.2-2
CaO	1.0	0.1-10
MgO	0.3	0.1-1.5
K_2O-Na_2O	8.0	6-10
Loss on ignition	4.3	3-11

Source: Carey, J. S.; Frye, J. C.; Plummer, Norman, and Swineford, Ada, 1952, *Kansas Volcanic Ash Resources;* Kansas Geological Survey Bull. 96, part 1, pp. 1-68

TABLE 2.
Chemical analysis of common glass wool

Oxide	Percent
SiO_2	64.0
Al_2O_3	2.5
Fe_2O_3	0.5
CaO	14.0
MgO	4.0
K_2O-Na_2O	10.0
B_2O_3	5.0

Source: Kirk, R. E. and Othmer, D. F., Editors, 1952, *Encyclopedia of Chemical Technology,* V. 9, N. Y., Interscience Encyclopedia, Inc., p. 127

TABLE 3.
Screen analysis; average and ranges for 96 Kansas volcanic ash samples

Screen size	Average (percent)	Range (percent)
On 20 mesh	1.6	0.0-23
Through 20 on 60	2.1	0.1-17
Through 60 on 100	3.8	0.7-14
Through 100 on 200	17.6	2-50
Through 200 mesh	74.6	35-90

mineral wool. First, it is a crumbly powder, not a solid rock. Therefore, it cannot be adapted in a cupola melting process; a reverberatory or glass melting furnace can be used. Second, though our Kansas ashes are nearly white in color, they contain too much iron to permit drawing fibers through platinum orifices. Fibers can be formed only by blowing or spinning.

Fusion temperatures (PCE)* for Kansas volcanic ashes, sampled by our research team, ranged between 1,950 and 2,150 deg. F. Probably another 500-deg. increase would be required to produce the viscosity necessary for fiber production.

There is only one stumbling block to the use of Kansas volcanic ash for mineral wool processing—higher than allowable SiO_2 content. This is overcome by the addition of limestone to the ash. The fact that this lowers the SiO_2 content, and lowers the fusion temperature of the ash mixture, too, has been established in recent unpublished work by Kansas Geological Survey on volcanic ash glazes.

Wools have been blown satisfactorily from materials of the following range of compositions: SiO_2, 35 to 65 percent; (Al_2O_3-Fe_2O_3), 0 to 33 percent; CaO, 5 to 50 percent and MgO, from 0 to 32 percent.

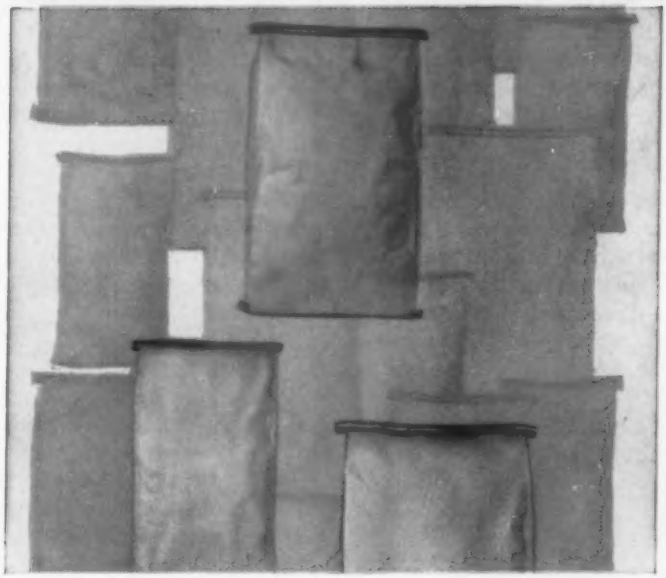
You will have noted that alkalies (Na_2O, K_2O) are present in the chemical compositions listed in Tables 1 and 2. Fibers formed from these glasses commonly are not as stable as alkali-free glasses in the presence of moisture. But this is a minor point in the production of building insulation, where the glass fiber has been treated with water repellents or is enclosed in vapor-resistant coverings. Volcanic glasses have withstood hundreds of years of weathering in the ground. **END**

Pyrometric cone equivalent

TYPICAL Kansas volcanic ash deposit shows the small amount of overburden on some of the deposits

in one year over 165 multiwall users reduced total packaging costs through UNION-CAMP's

SPECIFICATIONS CONTROL



another FREE service of the ★5 Star Packaging Efficiency Plan!

Could more efficient specifications control help you get more for your multiwall dollar? It has for more than 165 other firms who took advantage of the 5-Star Packaging Efficiency Plan. In one year alone!

UNION-CAMP multiwall specialists reduced total packaging costs for these companies by applying proved principles of specifications control. For example, standardizing bag styles—eliminating special or odd bag sizes. The improvements simplified filling and closing—reduced inventory levels. They also freed valuable warehouse space—saved tens of thousands of dollars a year.

There's probably a phase of your operation where substantial economies could be effected by the 5-Star Plan. Apart from specifications control, this packaging service offers you profit-producing improvements in bag design, bag construction, packaging machinery—plus a detailed survey of your plant.

And it doesn't cost a penny!

UNION-CAMP
MULTIWALL BAGS
Union Bag-Camp Paper Corporation 233 Broadway N Y 7, N Y

★ BAG DESIGN · BAG CONSTRUCTION · SPECIFICATIONS CONTROL · PACKAGING MACHINERY · PLANT SURVEY

Enter 1230 on Reader Card

Part 2**

Miami plant switchgear and controls are installed in air-conditioned, pressurized rooms to foil dust

Lehigh's power centers set new trend

by John F. Hower* & Anthony C. Lordi†

THE MODERN CEMENT PLANT uses metalclad switchgear housing drawout air circuit breakers. A feeder breaker for each operating department is desirable for independent departmental operation and for easier metering of each department. Either outdoor weatherproof or indoor switchgear is used, depending upon the availability of suitable plant area to house the breaker lineup. Modern outdoor switchgear shelters include sufficient space to perform normal breaker maintenance inside the housing and out of the weather.

At Lehigh's Miami plant, these circuit breakers are located in a clean pressurized switchgear and control room to minimize the dust problem. Lehigh's practice is to maintain a static pressure of .1 to .2 in. of water within a room with doors closed. Fan capacity in cfm. is usually rated at ½ to ⅓ of the room volume if a relatively tight building is provided. If cooling is required, louvers are provided in the doors or walls; fan capacities then must be adjusted accordingly.

The radial distribution system, as used at Miami, offers the advantages of low cost, simplicity and the reliability that is needed for cement plants. Sometimes additional cable capacity is installed to facilitate restoration of service following a cable fault. Multiple feeds in a selective arrangement sometimes are used for critical loads.

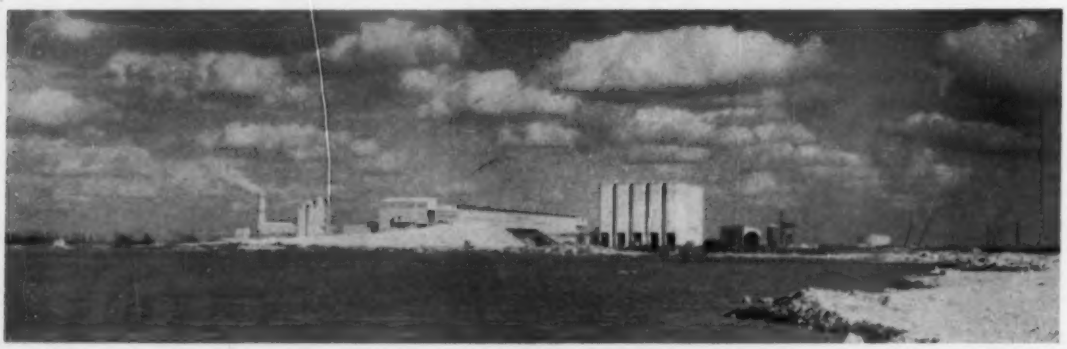
The choice of breaker capacity should allow a margin for future expansion and possible increase of utility system short-circuit capacity. The inclusion of a tie breaker or space for a tie breaker is desirable in the switchgear lineup where future expansion may increase the system short-circuit capacity above that of the feeder breaker inter-

Please turn to page 116

*Chief Electrical Engineer, Lehigh Portland Cement Co.
†Industrial Engineering Dept., Westinghouse Electric Corp.

**This is the second in a series of three articles on a modern cement plant's electrical system, as exemplified by Lehigh Portland Cement Co.'s new plant in Miami, Fla. Part 1, published in the May issue of ROCK PRODUCTS, discussed the power company facilities and voltage regulation. The authors, having described the substation that steps down the utility's transmission-line voltage to the plant's 4,160-v. distribution voltage, now are ready to explain features of the pressurized switchgear and control room, the underground distribution system and the low-voltage departmental systems

WATER IS NEVER FAR FROM GROUND LEVEL at Lehigh's Miami plant



Higher output on FINE GRINDING..20 to 400 mesh.. with WILLIAMS ROLLER MILLS

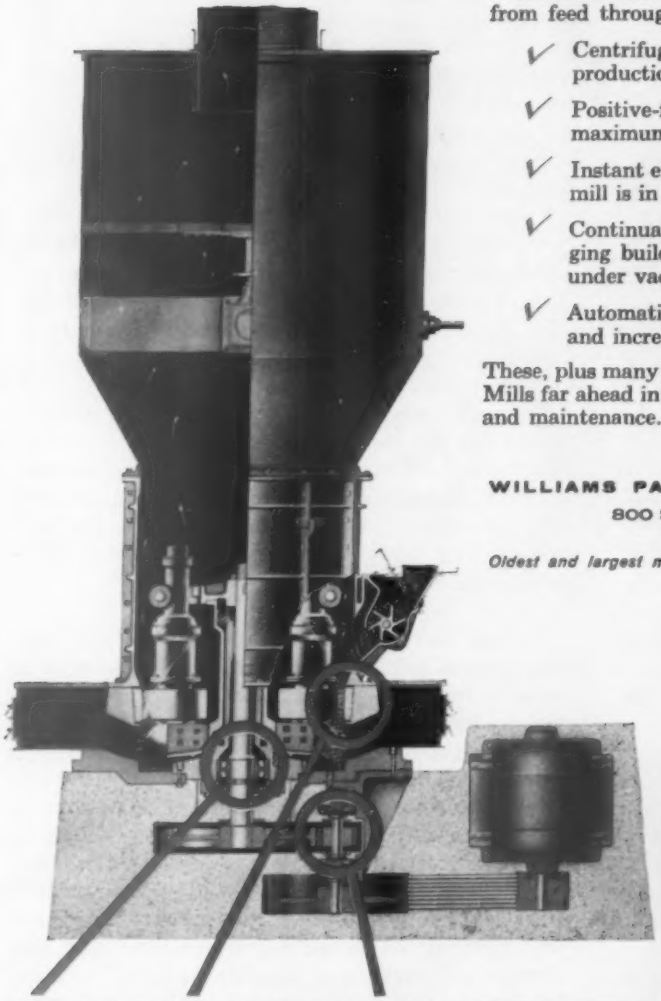
A Williams does the entire job in a single continuous operation—from feed through grinding, blending, drying and classifying!

- ✓ Centrifugal grinding roll action against bull ring keeps production high—automatically compensates for wear
- ✓ Positive-flow feed control is self-adjusting—maintains maximum capacity of mill
- ✓ Instant external fineness adjustment can be made while mill is in motion
- ✓ Continual upward air sweep to classifier prevents clogging build-up of finely ground material. Mill operates under vacuum to insure dustless operation.
- ✓ Automatically controlled hot air is available for drying and increased output of moist material.

These, plus many other advanced features keep Williams Roller Mills far ahead in higher production, lower costs. less downtime and maintenance. *Write for catalog.*

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
800 St. Louis Ave. • St. Louis 6, Mo.

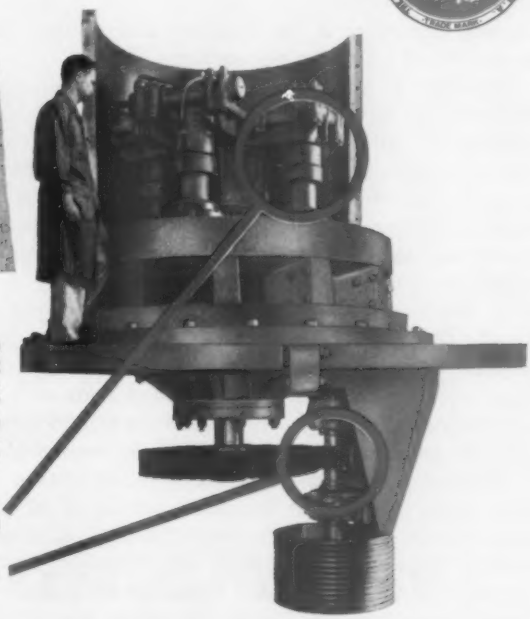
Oldest and largest manufacturers of hammer mills in the world



Troublesome alignment is greatly simplified and far less frequent with only 2 bearings on main shaft; the bottom one carrying both radial and thrust loads.

From here, material pulverized by rollers against bull ring are airlifted to classifier which passes correctly sized product and returns coarse material for regrinding.

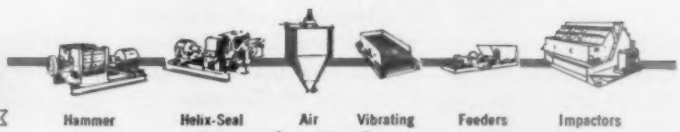
Exclusive! Only Williams has longer-life SPUR GEAR or GEARLESS DRIVES that eliminate expensive bevel and other hard-to-maintain gears. Standard and larger models have rugged spur gear and pinion drive—smaller models have direct motor-to-shaft V-belt drive requiring no care or lubrication.



"Giant" mill with cover section off show roller journals which suspend grinding rolls on bearings sealed against dirt and grit. Note wear-resistant steel forged bull ring.

Housing is also removed to show rugged spur gear and pinion drive. Easy, quick accessibility for service is another Williams time and money-saving feature.

WILLIAMS
CRUSHERS GRINDERS SHREDDERS



Hammer Mills | Helix-Seal Mills | Air Separators | Vibrating Screens | Feeders | Impactors

Enter 1220 on Reader Card

continued from page 114

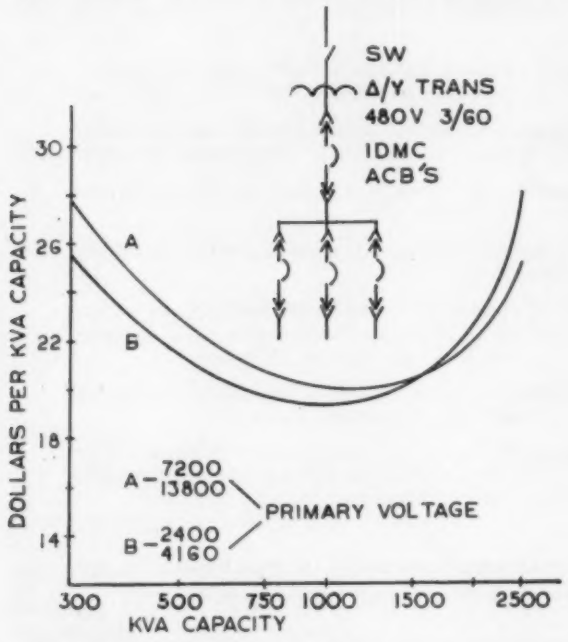


FIGURE 3—Lowest cost of indoor power center occurs in the area between 750 and 1,500 Kva.

rupting capacity. A tie breaker also allows the flexibility of isolating bus sections.

Fig. 6 shows the one-line power distribution system used at the Miami plant. Two 2,000-amp. incoming line and twelve 1,200-amp. breakers control and protect the radial feeders of 4,160-v. power to the various plant operating departments. A center-fed arrangement was used to facilitate the future addition of feeder breakers on the ends of the switchgear lineup.

A 438-kva., .8-pf. emergency diesel generator ties to the 4,160-v. plant bus. Control is arranged so that the 4,160-v. bus must be dead before the generator can tie in to supply critical loads such as are imposed by slurry air compressors and lighting. No paralleling with the utility is required.

Short circuit and momentary requirements of the feeder air circuit breakers are those of the substation: (1) 190,000 symmetrical kva. short-circuit capacity (including synchronous motor contribution) and (2) 365,000 asymmetrical kva. momentary capacity (including 15,000 kva. of motor capacity). Thus, the 4,160-v. breakers chosen were 5-kv. class, air circuit breakers, drawout metalclad, having 250-mva. interrupting capacity, 37,500-amp. 4-sec. capacity, and 60,000-amp. momentary capacity.

Each main incoming line unit contains a voltmeter, ammeter, power factor meter and switch to read power factor of any feeder; each also has both phase and ground directional overcurrent relays in addition to the conventional phase and ground overcurrent relays. The directional relays serve to isolate phase and ground cable faults on the incoming line side of the 5-kv. main breakers without necessitating a total power outage. Only the faulted circuit is isolated.

Each feeder unit contains an ammeter, a power factor switch with removable key, a kwh. meter, a recording wattmeter and phase and ground overcurrent relays. A hinged panel on the auxiliary section of the switchgear lineup mounts a duplex totalizing-recording demand meter and a kwh. meter.

The relay time-current curves for the outdoor substation and metalclad switchgear are shown in Fig. 7. Here, you can see how the relays coordinate with the largest feeder circuit, the 800-amp. raw mill motor feeder. Its large connected hp. and motor starting inrush command the highest relay settings of all the feeders.

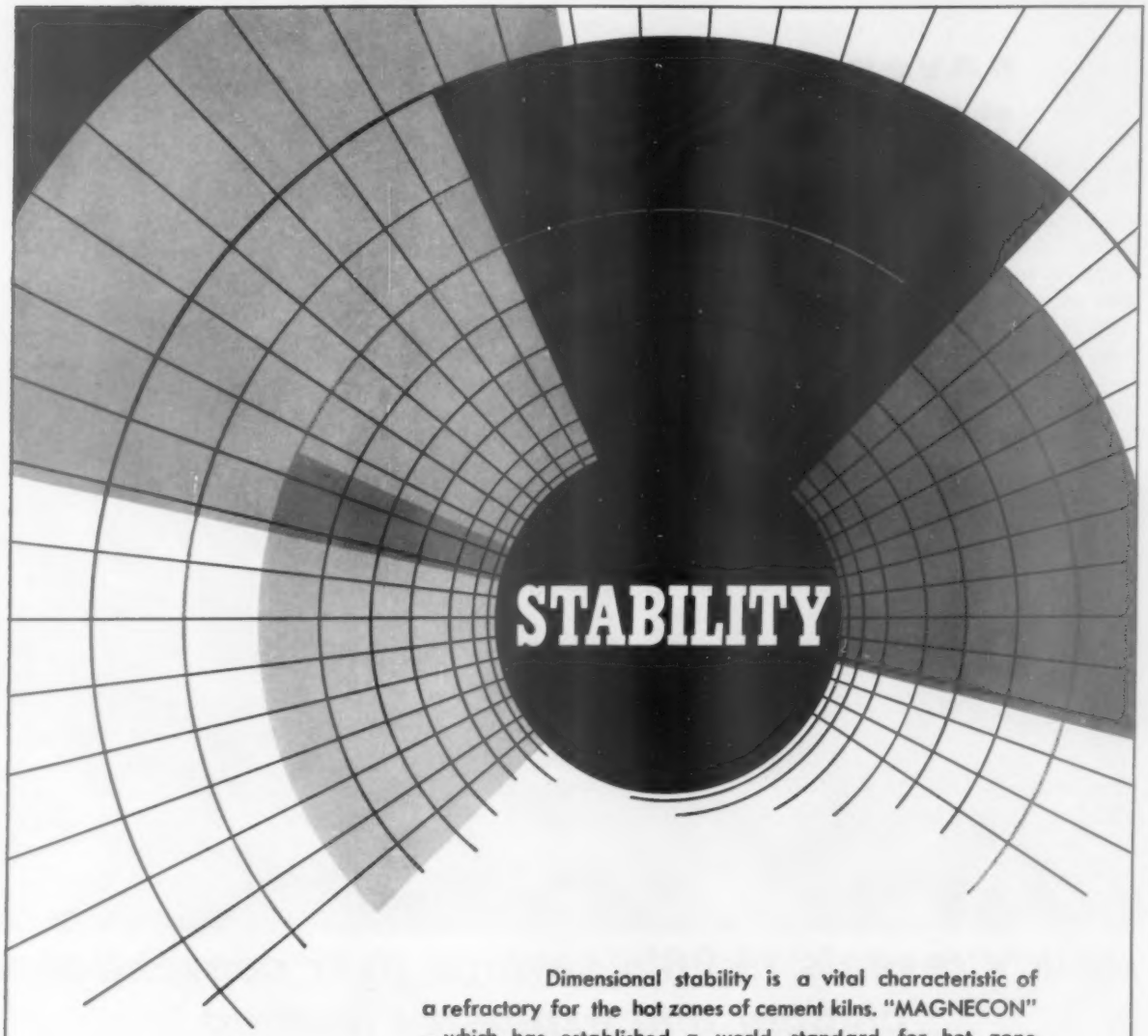
Layout and construction of the cable distribution system required extreme care, because it is below normal water level. All main power and control feeders in the Miami plant are distributed in the underground duct system.

Manholes had to be specially constructed because water seeped into the excavation as fast as it was pumped out. To cope with this situation, manholes were constructed in two parts. The lower section was cast, allowed to set, then lowered into the excavation. The top of the manhole structure was constructed to include waterstops, and was formed and cast after installation of the conduit. In this manner, a watertight manhole of adequate size for present and future needs was achieved.

Conduits in the duct system are rigid steel, hot-dip galvanized. All are one size larger than needed —this insures that cables will not be damaged by pulling and that they are easier to pull. Sufficient spares were included in the original installation to take care of twice the power load if the plant's capacity is doubled. The entire duct system is completely encased in concrete and is reinforced where needed because of traffic conditions.

Power feeder cables from the outdoor substation to the switchgear room and from the switchgear room to the various departments are all single-conductor-shielded, 5-kv.-butyl-insulated and neo-

Please turn to page 119



Dimensional stability is a vital characteristic of a refractory for the hot zones of cement kilns. "MAGNECON" —which has established a world standard for hot zone liners—has very high dimensional stability. "MAGNECON" was the refractory selected for seven of the largest cement kilns in the world, all newly completed or still a-building:

Miron Freres, Montreal, Que.
Kiln 550′ x 15′ diameter

Ciments d'Obourg, Obourg, Belgium
Kiln 525′ x 15′ 7″ diameter
Kiln 525′ x 14′ 7″ diameter

Dundee Cement Co., Dundee, Michigan
2 kilns 460′ x 16′ 6″—15′
—16′ 6″ diameter

Ciments Liegeois, Harcourt, Belgium
Kiln 475′ x 13′ diameter
Kiln 510′ x 14′ 5″ diameter

CANADIAN REFRACTORIES LIMITED
CANADA CEMENT BUILDING, MONTREAL, CANADA

1908

Enter 1247 on Reader Card

saves $1500 PER MONTH with orton crane and dropball

Study reveals 19.96% savings over conventional plugger and explosive method

In a series of exhaustive tests in an open pit operation, a large mining corporation has recently determined that the cost of breaking rock can be cut by over $18,000 per year with the use of an ORTON Crane operating a dropball.

The tests considered all expenditures including cost of equipment, labor and maintenance.

Intangibles such as reduced air consumption, plugger replacements, decreased shovel maintenance, less time loss at the crusher were *not* included in the tests. These factors are considered worth many more thousands of dollars.

ONE IMPORTANT POINT WAS OBVIOUS IN THE REPORT: *The ability of a compact, mobile crane to stand up under this shattering work, continuously, shift after shift with little or no maintenance or down time is a highly significant factor in these savings!*

For facts about this remarkable crane—or other units up to 250-ton capacity, write for brochure.

Note easy accessibility to diesel engine. ALL ORTON cranes have smooth, shock-free, Torque-Control fluid clutch, finger-tip, air-operated controls, anti-friction bearings throughout—and are also available in *completely hydraulic* models.

orton

CRANE AND SHOVEL CO.
608 S. Dearborn Street CHICAGO 5, ILLINOIS
THE MOST POWERFUL NAME IN CRANES

continued from page 116

prene-jacketed. The largest cable size that we judged practical for pulling into conduits was 500,000 circular mils. To prevent cable damage in event of 3-phase fault on the 4,160-v. system, 4/0 awg. was the minimum size cable used.

Low-voltage power and control cables are chiefly of the RHW type in all areas except in the kiln department. There, silicone-rubber-insulated conductors were used throughout for power, lighting and control leads because of higher temperatures and possible water conditions. All kiln department cables are jacketed with glass and/or asbestos braid.

The 65-kv. cables from the power packs to the electrostatic precipitators are insulated with polyethylene. These cables are supported in open cable trays. To assist plant personnel in maintenance work, all conduits in the manholes are numbered with metal tags. Wires and cables are identifed by terminal numbers and circuit numbers attached with pressure-sensitive tape.

Location of power centers in clean pressurized rooms is the trend in cement plants. Under these conditions, either ventilated dry type or Inerteen-filled, power-center transformers are suitable. When power centers are located in the plant area and subject to considerable dust, the Inerteen, or sealed-dry-type, transformer is preferred. Power-center transformers located outdoors should have terminal chambers to eliminate the flashover problem associated with exposed bushings.

Placing several smaller power centers at load concentrations is preferred over the use of large, centrally located units. Lower voltage drop, less power loss and more flexibility, as well as lower initial investment and increased reliability, are realized by the use of the smaller units. Typical power center capacity requirements are about 85 percent of the connected hp. in transformer kva. Additional loads not considered in the initial planning and future expansion should be considered when choosing power center capacities.

Control centers usually are located very near power centers so that the required fault capacity of these control centers are essentially those of the power center. Cable reactance can appreciably reduce control center short-circuit requirements when control centers are located remote from the power centers, and should be considered. Control centers braced for 25,000 amp., using a main incoming line LM frame molded case breaker, and cascading the smaller F frame breakers, can be applied on 480-v. systems having fault capacities up to 25,000 amp. symmetrical.

Other means are available to protect control centers against fault capacities above 25,000 amp. Current-limiting fuses built integrally with molded case breakers can be used on the incoming line circuit to limit fault duty on the small breakers without the possibility of single-phasing. Reactors or additional impedance built into the power center transformers can be used to limit fault current on the motor breakers. However, increased reactance built into the system increases voltage regulation and cost. Additional bus bracing is required when the control center bus is subjected to currents over 25,000 amp. symmetrical.

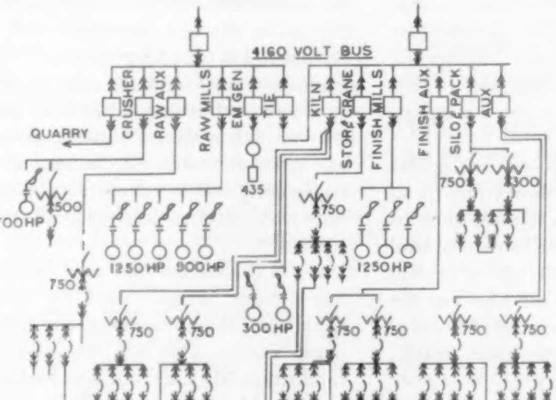
Voltage regulation at the 480-volt level of use should be considered when choosing power center capacity. Primary taps of the center should be adjusted to give rated secondary voltage at no load. Voltage drop at motor terminals should not exceed 10 percent of their rating during starting, which is the most severe operating requirement.

Fig. 3 is being reproduced with Part II of this series so that you can check the economical capacity of power centers that are between 750 and 1,500-kva. Data for these curves were based on (1) 480-v. secondary indoor power centers, (2) primary air load-break switch, (3) fully rated secondary breakers, indoor drawout metal enclosed, (4) 250-mva. short-circuit capacity at the power center primary and (5) a secondary feeder breaker for every 600 amp. or less of rated secondary current.

Power centers with fully rated, metal-enclosed

Please turn to page 124

FIGURE 6—The schematic power distribution system at Lehigh's Miami plant



Enter 1242 on Reader Card

Michigans help increase production while manpower remains constant. Latest example:

13-ton Tractor Wagon replaces

By replacing three 8-ton dump trucks with one 13-ton Michigan Tractor Wagon, manpower and maintenance expense have been substantially reduced in the stockpiling operation at the Lee Crawford Quarry Co., Cedar Rapids, Iowa.

Lee Crawford, owner-operator of this 250,000 ton per year Florentine limestone quarry and crushing operation, believes in matching equipment to the job. Production has steadily increased since he started "from scratch" 14 years ago, even though for the past 8 years his crew of eight men has remained the same. He has been able to do this by increasing equipment capacity and efficiency.

Michigan Tractor Shovel replaces swing shovel, portable conveyor

Five years ago his first Michigan machine was purchased . . . a Model 75A Tractor Shovel which replaced both a swing shovel and a portable conveyor. This permitted reassignment of one man for work in another part of the quarry. The unit handles *all truck loading* at the stockpile. It also grades haul roads and unloads equipment from trucks.

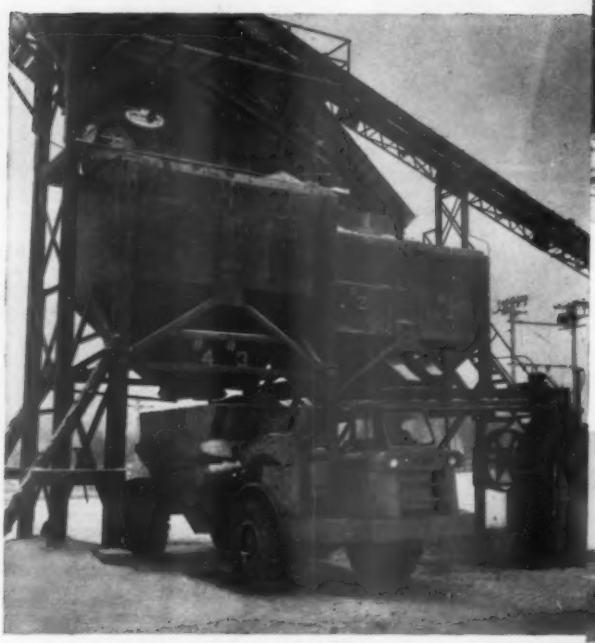
The economical and efficient operation of the Tractor Shovel proved so gratifying that when it came time to replace three dump trucks used to haul from crusher to stockpile, Owner Crawford decided to see what else the Michigan line had to offer. He called in Michigan Distributor, Spreitzer Inc., from Cedar Rapids.

Stopwatch demonstration proves speed and capacity

After discussing his needs, the Distributor brought out a 13-ton Model 110 Tractor Wagon. On a typical cycle, the Michigan loaded 3-inch stone at the crusher bin, traveled 400 ft to the stockpile, made a 90-degree turn, backed 100 ft up a 17 percent adverse grade, unloaded *over the edge* of the stockpile, and returned 500 ft to the bin—all in less than 2 minutes. Average speed for traveling, backing and accelerating was 9½ mph. Similar results were obtained on runs to all four stockpiles.

It was evident that one man and the one Tractor Wagon could do more work than three men with the three dump trucks. This was the kind of production Mr Crawford was looking for. The Michigan stayed. Two of the truck drivers were reassigned jobs in other quarry operations. Thus, manpower in the stockpiling operation was

Michigan, by dumping over edge of bank, eliminates need for dozer cleanup.



During free time from stockpiling, Michigan hauls shot rock.

Big top-opening speeds loading of crushed stone.

Capacity and efficiency of Michigans, as proved by five years experience with this Tractor Shovel, triggered purchase of the 13-ton Tractor Wagon.

three 8-ton dump trucks

cut by ⅔. Maintenance, too, was reduced from three machines to one.

Stockpiles 2,500 tons per 7½ hour day

Today, a typical 7½ hour shift calls for 24 trips per hour from crusher bins to stockpiles. Distances vary. Maximum round trip cycle is 1400 feet. Average is 600 feet, with good cycle time figured at 1 minute and 20 seconds. Hauling in excess of 13 tons per load, production amounts to about 2,500 tons per day. The Michigan is scheduled to keep all stockpiles at an operating level of 30,000 tons. Normally it can do this and still have time to assist in other areas of the quarry.

Hauls shot rock, too

Naturally, the 162 hp Model 110 is right at home in the quarry pit too. Here it frequently helps two conventional off-the-road dump trucks haul shot rock to the crusher. It accelerates fast . . . also has the major advantage, because of the rolling action of its big low-pressure tires, of reducing haul road maintenance.

Truck problems eliminated; so is need for dozer cleanup

"Another major Michigan advantage," says Mr Crawford, "is its ruggedness. Our trucks were being beaten to death on this work. We've had lime piles 50 ft high with grades the trucks just couldn't pull, not to speak of frame distortion and all its complications. This has all been eliminated by changing to the Michigan. Also, the Tractor Wagon's ability to dump over the edge of the stockpile has done away with the part-time need of another machine to push the material over. The Michigan is a good example of what I mean by matching equipment to the job."

Get all the facts

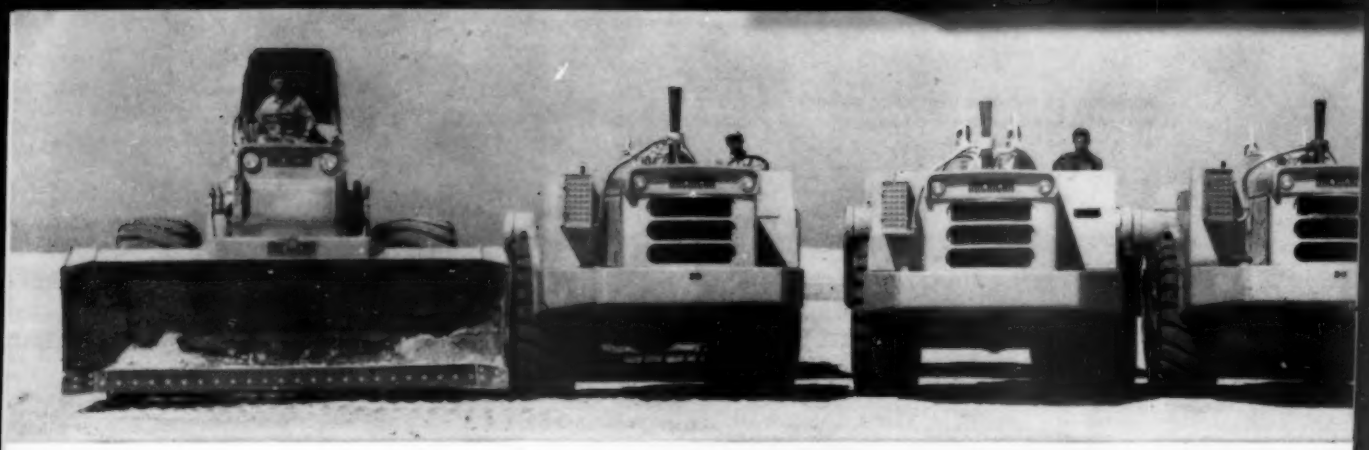
Like to see how a high-speed rear-dump Michigan Tractor Wagon can be matched to *your* job? Then call your Michigan Distributor for all the facts. He has two model Tractor Wagons to choose from—13 ton and 25 ton capacities.

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK EQUIPMENT

2481 Pipestone Road
Benton Harbor 36, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario



▲ Accent on rubber is evident from Holloway's line-up of equipment. Note the two Michigan Tractor Shovels, the three Michigan Scrapers, and the Michigan Dozer—all on rubber.

Matched earthmoving team—Michigan Model 380 Dozer push-loading Michigan Model 210 Scraper—picks up 18 tons of sand-silt-clay overburden in 40 to 75 seconds. Later, same machines will load gypsum. ▼ Average payload in this material: 16½ tons.

Gypsum producer halves machine needs, cuts operating costs, yet raises output. The "key":

His Matched Michigan Tractor

Operating efficiency has hit an all-time high—and costs an all-time low—for H. M. Holloway Inc., California's largest producer of gypsum.

Main reason is a switch in their work fleet from crawler to rubber.

Three 19-yd Model 210 Michigan Scrapers now handle both overburden removal and gypsum mining. These units are the only Scrapers on rubber which have proved capable of climbing up soft sand-silt stockpiles.

A Model 380 Michigan Dozer handles scraper push-loading. Its 375 hp on rubber has cut average load time from 2½ minutes to under 1 minute.

Two Model 175A Michigan Tractor Shovels load the finished gypsum . . . 22 ton trucks in less than 4 minutes each.

With scrapers, dozers, and loaders all one make—all with similar power trains, controls, engines, tires, etc.—Holloway gets the benefits of lower parts stocks . . . easier operator training...easier servicing.

Michigans have brought about *much lower operating costs, too.* Holloway's records show total hourly costs for each machine (wages, fuel, maintenance, parts, depreciation, insurance and taxes) to be equivalent to what they were previously spending on *crawler track maintenance alone,* according to H. S. Holloway, company president.

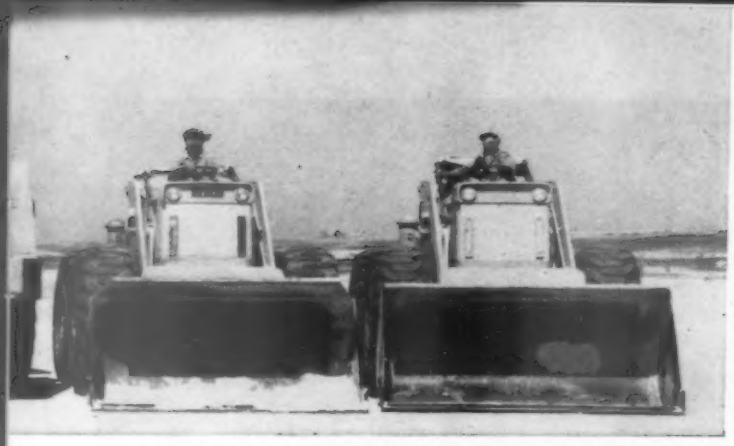
"We now mine, mill, and load over 3,000 tons of gypsum a day," says Claude Knox, company v.p.

"The Michigan Dozer and Scrapers, four units, do *twice the work* of the *six* crawler-mounted rigs they replaced," adds Mr. Holloway.

"What's more," he says, "we used to remove no more than 3 ft of overburden to get at 3 ft of gypsum. Now, the ratio has been cut to 3 ft of overburden to *2* ft of gypsum . . . so layers once wasted are now profitably mined."

Overburden removal: 2,500 tons every 9 hours

In typical operation, the Michigan



▲ Scraper unloads silty overburden on 35- to 40-foot-high piles over wasteland. Once considered a crawler job (other rubber-tired scrapers tried and failed), the Michigan handles hill-climbing on free-running silt with comparative ease. ▼

◀ Michigan Tractor Shovel attacks gypsum stockpile, loads 2¾ to 3 cu yds per "bite." Typical 22 ton truck takes 6 passes, 3½ minutes.

Dozer-Tractor Scraper fleet

Dozer-Scraper four-unit team strips 2,500 tons of overburden every 9-hour shift. By building dump piles 35 to 40 ft high in adjacent-mined-out areas, double-handling is eliminated, also haul distances are kept under 1,000 ft. This, incidentally, is the job no other rubber-tired Scraper could do; success of the Michigans in climbing the free-running silt is attributed by Mr. Holloway to their excellent balance, power-shift-torque converter drive, and high ratio of horsepower to loaded weight.

Same units mine gypsum

When all overburden has been removed from a work area (usually 400 x 800 ft), the Michigan Dozer-Scraper team keeps right on working, removes the layer of gypsum. This material is dumped in windrows, roughly 11 ft wide, 2 ft deep, 600 ft long.

Tractor Shovels load 2,200 tons daily

Next step is processing—300 tons per hour—and the final step, once the ready-to-use, one-inch-minus material is spewed by a conveyor into large stockpiles, is loading. This last job is handled by two 2¼ yd Michigan Model 175A Tractor Shovels. Their output averages 2,200 tons per unit per day.

Demonstrate? Glad to!

If *you* are one of the *11,000 owners* of Michigan Tractor Shovels, we urge you to look into the added efficiencies of having the same power train in *your* Dozers or Scrapers. Pick the Michigan model and size you'd like to see . . . then call to arrange a demonstration. Michigan Tractor Shovels are now available in bucket capacities of 9 cubic *feet* to 10 cubic *yards* . . . Dozers: 162, 262, 375, and 600 hp . . . Scrapers: 10½, 19 and 29 yards.

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK EQUIPMENT

2481 Pipestone Road
Benton Harbor 39, Michigan

In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

LEHIGH'S POWER CENTERS SET NEW TREND

continued from page 119

switchgear are preferred over those using switchgear in cascade for the sizes 1,000 kva. and below. The possible small additional cost of the fully rated system is easily justified by reduced breaker maintenance and additional breaker capacity. Where desired, an additional degree of service continuity is available from the use of selective breaker tripping, as only the faulted power center feeder is isolated.

The low-voltage system usually is either solidly neutral grounded or ungrounded with ground detectors. A divided opinion exists among operators on the relative merits of grounding low-voltage systems. The former reduces hazards from overvoltages and makes it easier to locate ground faults. With the latter, there is no immediate outage on the first ground fault and ground-fault currents are extremely low.

These merits should be weighed by the operator in the light of his operating requirements and maintenance procedure. Where required, the added degree of service continuity believed to be available from the ungrounded system requires prompt detection and removal of the ground fault from the system. Failure to do this may result in more downtime and equipment damage than an unplanned outage with the other system.

When a question exists about operating conditions, the wye-connected, low-voltage winding (delta primary to stabilize the neutral and suppress third harmonic voltages) may be desirable in the power center transformer, as it permits either grounded or ungrounded operation. Essentially ungrounded operation can be effected without the possible hazard of transient overvoltages by use of a 5 or 10-amp., continuously rated, neutral grounding resistor. Where a neutral is not available, a 1½ to 3-kva. zigzag grounding transformer can economically provide a low-voltage system neutral. **END**

EDITOR'S NOTE: This discussion of relative merits of grounding low-voltage systems will continue in Part III of this series. The concluding article will contain, in addition, description of power centers at the Miami plant, the quarry distribution system, and instrumentation and metering requirements.

BELOW: Clinker mill power center is a 1,500 Kva. double-ended setup in a pressurized room

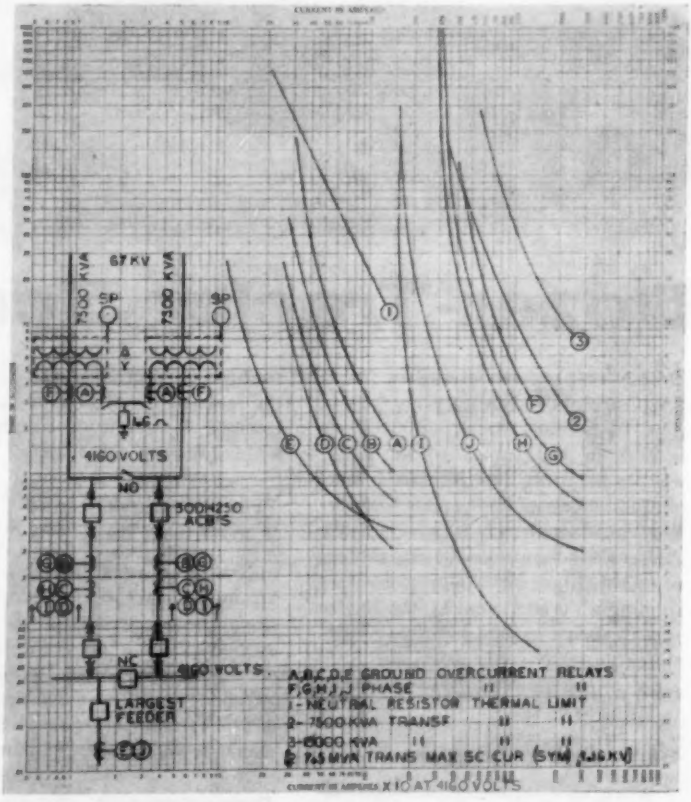


FIG. 7—Time-current characteristic curves of phase and ground overcurrent relaying in the Miami plant's substation and 5 Kv. switchgear

Where heavyweights move job records prove...

FIRESTONE IS HAUL-ROAD CHAMPION!

Switch to Firestones and hold downtime to a contract-meeting minimum. You can do this because Firestone off-the-highway tires are job-engineered for the toughest projects. There's a Firestone for every need on any project—and every one is built with Firestone Rubber-X, the longest-wearing rubber ever used in Firestone tires. Exclusive Firestone SHOCK-FORTIFIED nylon cord bodies guard against impact damage. And what's more, Firestone's Giant Tire Service backs up every Firestone tire—that means a Firestone Tire Expert will handle all your tire maintenance problems! Turn downtime into worktime—call your Firestone Dealer or Store today.

ALWAYS SPECIFY FIRESTONE TIRES WHEN ORDERING NEW EQUIPMENT

Super Rock Grip Wide Base* Super Rock Grip Deep Tread*

TUBELESS OR TUBED

Firestone

BETTER RUBBER FROM START TO FINISH

Copyright 1960, The Firestone Tire & Rubber Co.
*Firestone T.M.

Enter 1221 on Reader Card

Tight space necessitated this invention: a troughed belt conveyor that conveys material vertically and horizontally without transfer points

On the level: this belt conveyor goes straight up

by Andrew W. Jenike, Ph.D.*

A LOW-COST, INGENIOUSLY SIMPLE CONVEYOR developed at the Utah Engineering Experiment Station, Salt Lake City, uses straight flat belts to convey and elevate sand, gravel, coal and other bulk materials in a vertical plane. We call it a troughed belt conveyor-elevator.

Designed to meet the needs of the station's Bulk Solids Flow Laboratory, the conveyor is made up of a troughing belt and a closing belt. The troughing belt follows an approximately rectangular path; it runs troughed along the part of the path that carries material and flat along the rest of the trip.

The closing belt covers the troughed belt along the curved path, where the material is elevated, and carries material along the top run, discharging over the head pulley. The curved path is formed of a steel slide plate supported by a steel and wooden frame.

We decided to build our own conveyor after a survey of the market failed to produce an economical design suited to our requirements. A conveyor-elevator was needed to handle 300 cu. ft. per hr. of material weighing up to 150 lb. per cu. ft. The material was to be picked up on the lower floor of the laboratory at either one of two feed points or at both feed points simultaneously, elevated to the upper floor—a height of 13½ ft.—and discharged at a single point.

The nature of the work would require numerous recirculations of the materials. Therefore, the conveyor-elevator had to handle gently, without shearing the material and, preferably, without rehandling. Furthermore, the conveyor had to be self-cleaning, as far as possible, to allow for the change of tested materials without contamination.

A simple inclined belt conveyor had to be excluded for lack of space; an arrangement of two belt conveyors could not be used for the same reason. Belt conveyors in conjunction with a bucket elevator were considered, but the inherent disadvantages of the bucket elevator could not be accepted. Run-around conveyors of the bucket type were studied and discarded because of their high

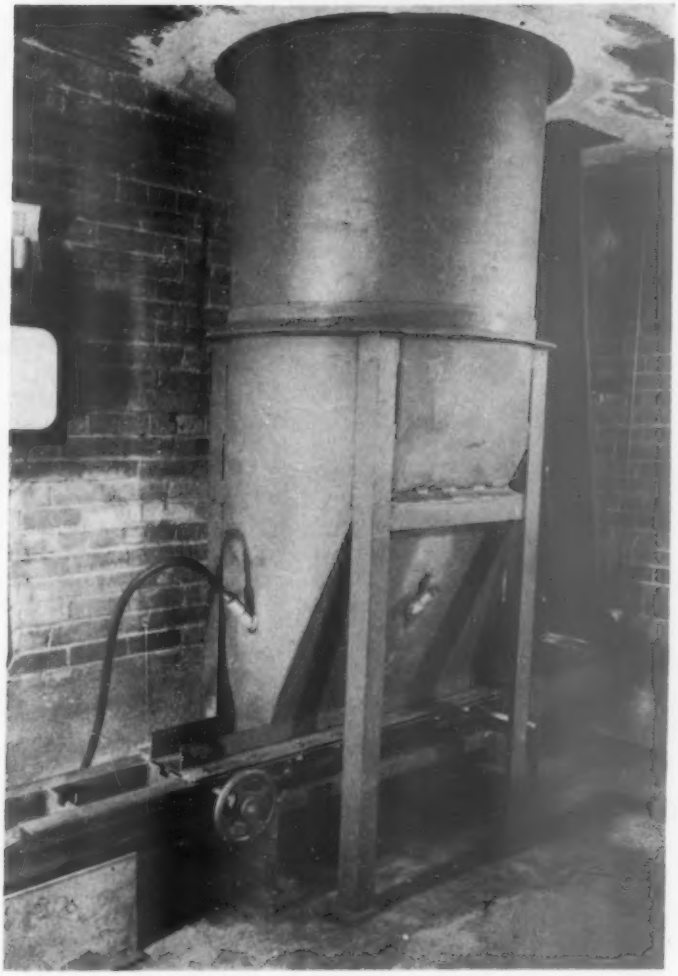
Please turn page

*Material Handling Consultant, P. O. Box 2106, Salt Lake City 10, Utah

The conveyor-elevator described in this article was conceived, designed, manufactured and erected in the course of the development of the Bulk Solids Flow Laboratory at the University of Utah. This laboratory was set up within the framework of the Bulk Solids Flow Project in order to provide experimental verification of bulk solids flow theories and to determine the values of flow constants. The author, Andrew W. Jenike, is project director of this work and has a patent pending on the conveyor-elevator.

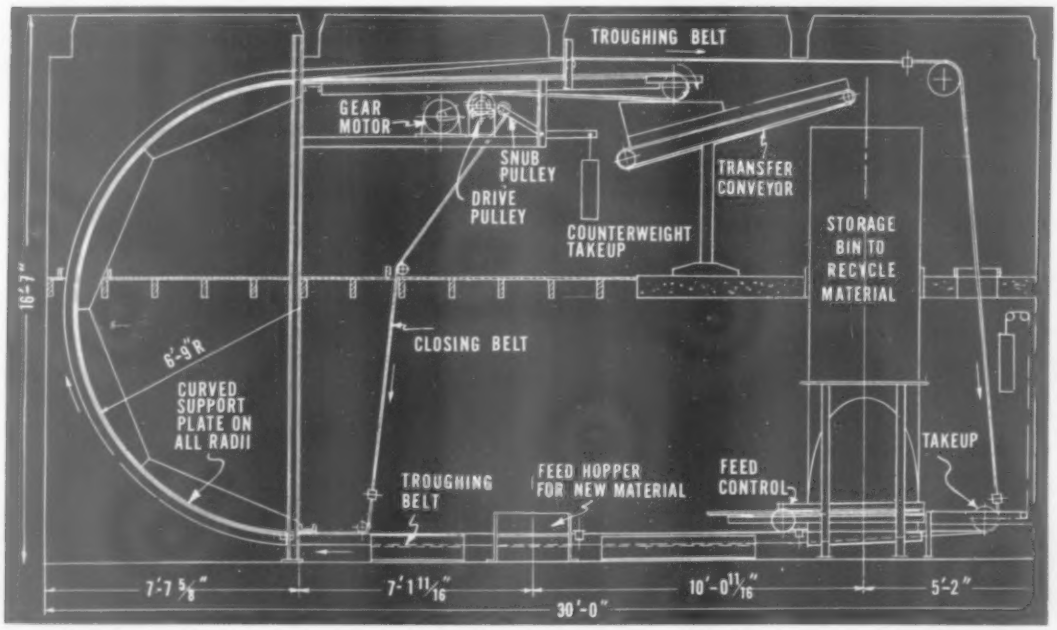
The Bulk Solids Flow Project is sponsored by the Utah Engineering Experiment Station, University of Utah; the American Institute of Mining, Metallurgical and Petroleum Engineers; the Engineering Foundation, United Engineering Trustees; the American Iron and Steel Institute and Kaiser Engineers, Div., Henry J. Kaiser Co.

RIGHT: Storage bin feeds material directly into the troughing belt



TROUGHED BELT full of material in place on closing belt goes around a vertical curve without spillage

LABORATORY ARRANGEMENT of conveyor-elevator system



ON THE LEVEL: THIS BELT CONVEYOR GOES STRAIGHT UP

continued from page 127

TROUGHED BELT can receive granular material directly from a belt feeder

cost and the large number of parts requiring cleaning and maintenance. Run-around flight conveyors were considered unsuitable because the shear of material and friction at channel walls would result in excessive wear, and cleaning during changes of materials would be a major operation. A "zipper" conveyor seemed most promising in all respects, but its cost would have been high.

By the time we completed our market study, it had become apparent that straight flat belts would be most suitable for our purpose. The troughed belt conveyor-elevator which we subsequently designed fully satisfies all the requirements.

Only the closing belt is driven. The troughing belt is propelled by the closing belt through friction along the lines of contact on the curved path. Both belts are tensioned by gravity take-ups. The troughed belt is guided along its path by five pairs of side rollers. Rollers force the belt to form a trough, control the width of the trough as the belt enters the feed hopper, guide the belt at the entry onto the curved slide plate and guide the belt at corner pulleys.

The closing belt is controlled by a training idler as it enters the curved slide plate. The troughed belt is supported by steel troughs along the bottom run. The closing belt is also supported by a steel troughed slide plate along its horizontal upper run.

The conveyor travels at 70 fpm. and is driven by a 1½-hp. gearmotor. The pulley diameters are small in order to save space, particularly headroom. For instance, the head and drive pulleys of the closing belt are 8 in. diam., and take-up and training idlers are 3½ in. diam. The corner pulleys of the troughing belt are 12 and 8 in. diam.

The closing belt is 12 in. wide and is made of 3-ply, 32-oz. cotton-nylon fabric with a 1/32-in. rubber cover on the load-carrying side; there is no rubber cover on the surface facing the slide plates. The troughing belt is 10 in. wide and contains two 3/16-in.-diam. steel cables at the edges. A nylon breaker fabric is used in order to make the belt free to expand between the cables and to force the cables to take up most of the belt tension. This is necessary to assure the retention of the trough and to form a seal between the two belts along the elevating part of the conveyor.

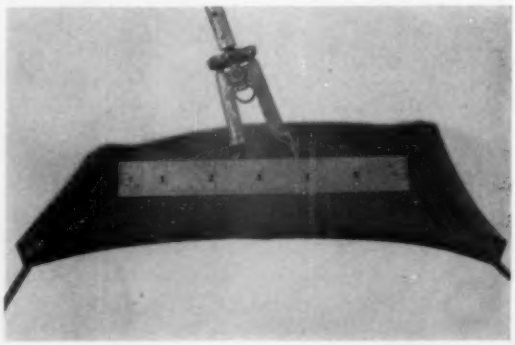
The conveyor-elevator may be adaptable to other layouts. The principles will certainly apply for most practical belt arrangements. In fact, it might be possible to twist the slide plate as well as curve it. This would permit a three-dimensional layout for the system and greatly widen its usefulness.

The drive in the present arrangement is applied to the closing belt. But it is entirely feasible to drive the troughing belt or to drive both belts. These possibilities add greatly to the adaptability of the system, to the life of the belts and to the speed and capacity of the arrangement.

In the experimental layout the belts were 10 in. and 12 in. wide. They could be made much wider to handle more material, and the belt speed could be stepped up well beyond 70 fpm.

A patent is pending on the design of this arrangement. **END**

CROSS-SECTION OF THE TROUGHING BELT shows its special construction

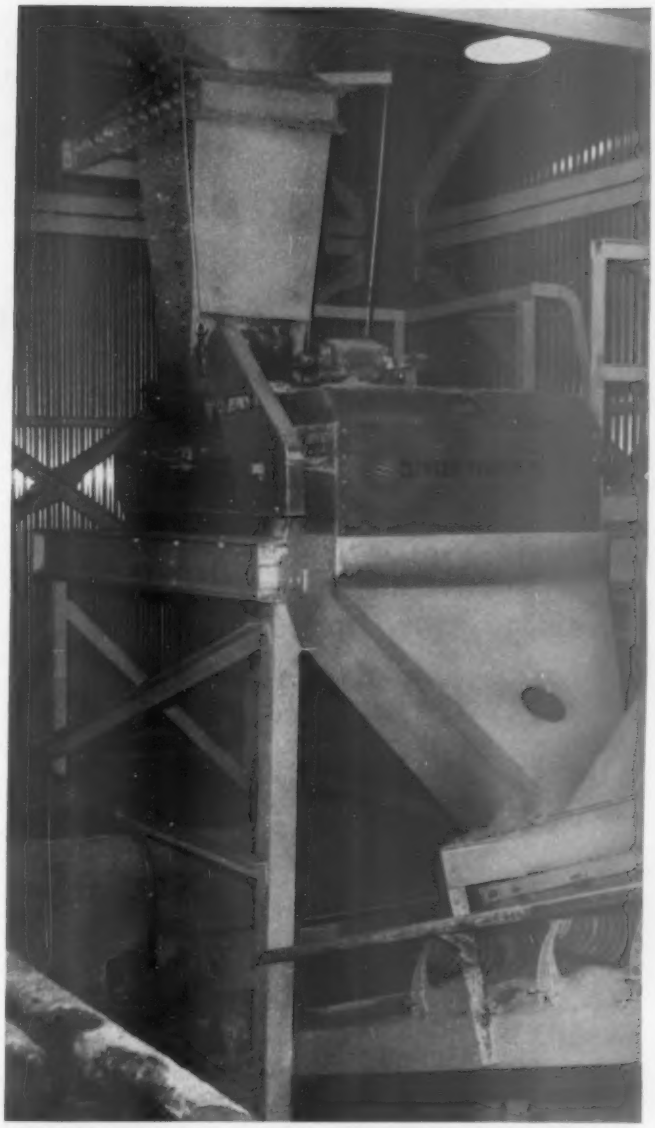


JEFFREY Weigh-Feeding helps achieve peak efficiency in new cement plant

Arkansas Cement Corporation in Foreman, Arkansas has one of the nation's most modern and highly automated cement plants. Designed and built by Kaiser Engineers of Oakland, California.

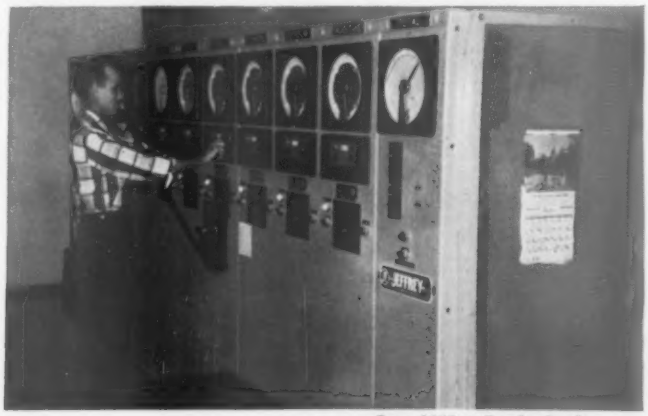
JEFFREY WAYTROLS®—machines which weigh materials as they feed them—were integrated into the automated system for handling the dry raw materials. These units continuously and automatically proportion by weight and feed materials to the various functions in the mill building. Complete instrumentation of this feeding equipment permits immediate adjustments as required in processing.

If you're interested in automating your conveying and processing operations and lowering costs, it will pay to consult Jeffrey. For information, write The Jeffrey Manufacturing Company, 935 North Fourth Street, Columbus 16, Ohio.



Jeffrey Waytrols like this one continuously proportion and feed chalk, iron ore, additive materials, clinker and gypsum at the huge Arkansas Cement plant; capacity is 1,400,000 barrels per year of Foreman Portland Cement and similar products.

One of two panels of Jeffrey instruments from which feed rates of individual Waytrols are controlled. Total feed rates can also be adjusted for over-all-mill control.



JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT...
TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

Enter 1200 on Reader Card

Keep your electrical equipment humming with periodic inspections

How to check motor controls

by Harry E. Head*

PROPER MAINTENANCE of electric motor controls is essential to provide continuity of service in today's modern rock products plant. Serious losses in production may result from a poorly planned maintenance program. Motors cannot run without the electrical control to connect them to the supply lines. Motors will not be adequately protected unless control overload relays and protective devices are properly maintained. Minor control troubles very often cause serious cumulative damage; they can even make complete replacement necessary.

Safe, thorough installation is the first requirement for a good maintenance program. Safeguard your workers by locating apparatus so that accidental personal contact with live parts is avoided. And install the equipment so that the power supply can be disconnected before repairs are made.

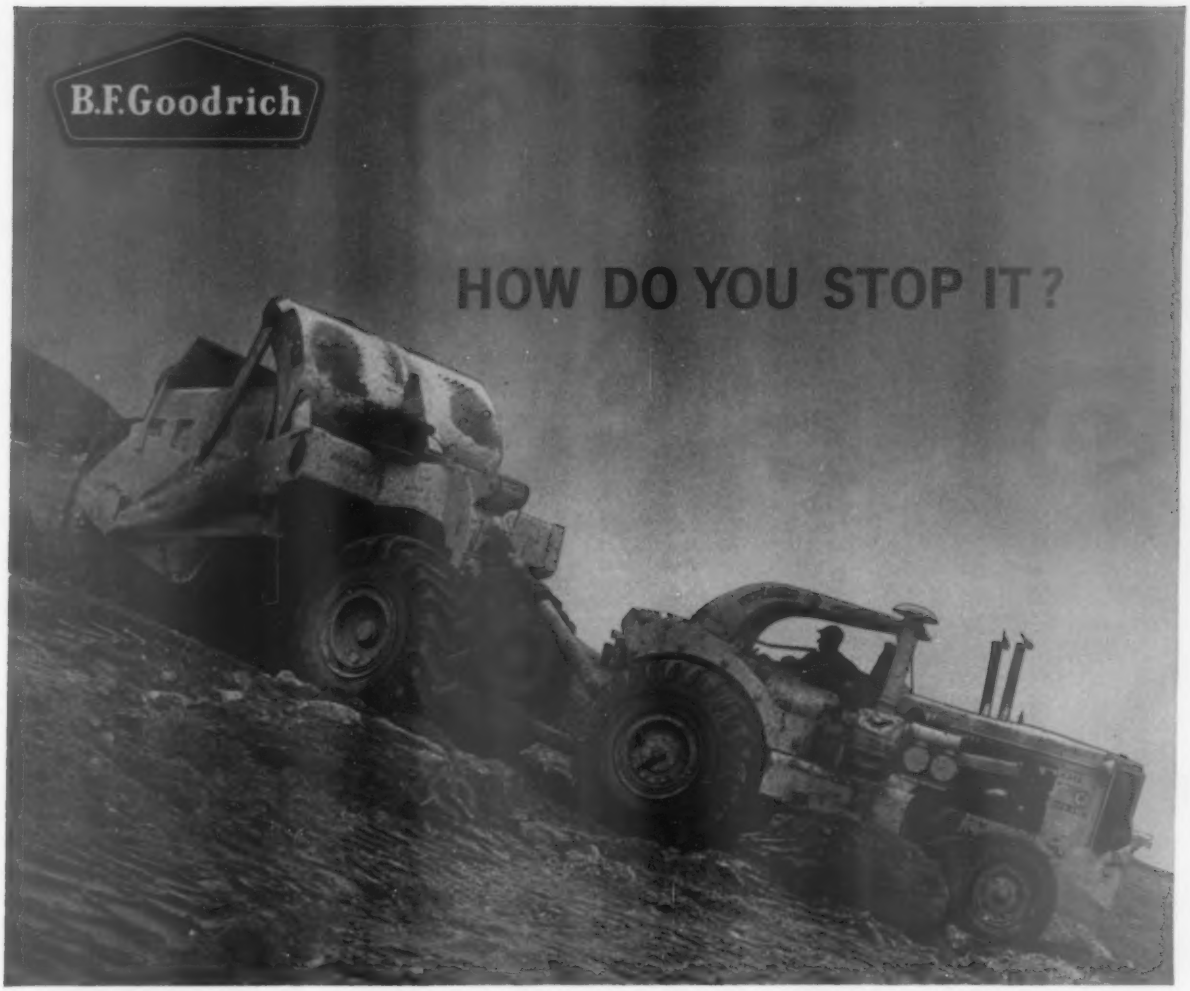
Connections of all incoming cables should be tight and well made. Tests should be made to prove the adequacy of the equipment before it is put into service. Where possible, install controls in a clean, dry location; clean controls require less maintenance.

A periodic inspection program should be established after the control is properly installed and in good working order. Monthly inspection is usually adequate for most apparatus. When severe operating conditions exist, such as jogging, plugging,

Please turn to page 132

*Control Engineer, Electric Machinery Mfg. Co.

MOTOR CONTROL MAINTENANCE is particularly important in cement plants



Hi-Torque brakes give uniform pressure, *full circle contact.* This provides maximum effective braking surface in the same size unit...double the braking power.

HI-TORQUE BRAKES!

B.F.Goodrich Hi-Torque brakes cut stopping distance approximately in half, compared to conventional two-shoe brakes tested on identical vehicles and loads. The added safety factor with these brakes means you can haul bigger loads more safely, operate on faster cycles. More difficult off-highway jobs can be tackled.

For *double the braking power* on your heavy weight vehicles, specify Hi-Torque brakes as original equipment. These brakes are now available on heavy dump trucks, tractor-scrapers, coal haulers, mine trucks and other big vehicles, from several manufacturers.

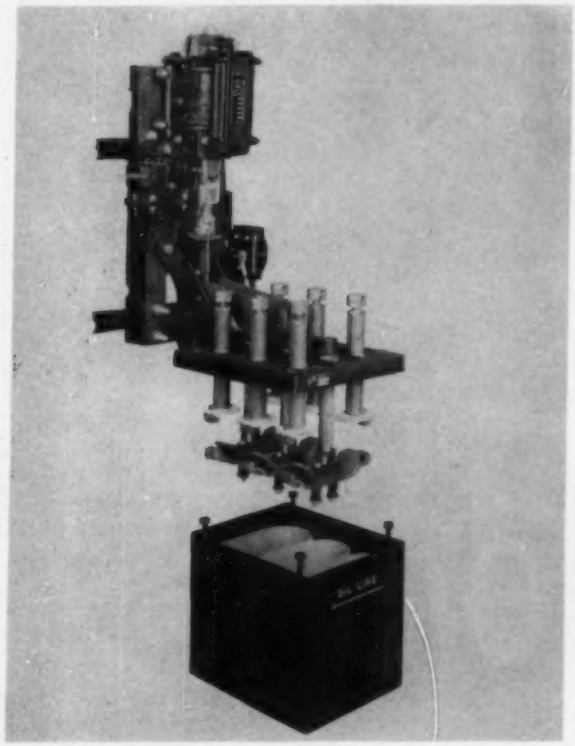
For complete information ask the manufacturer of your equipment, or write *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. RP-6, Akron, Ohio.*

B.F.Goodrich Hi-Torque brakes

Enter 1297 on Reader Card

HOW TO CHECK MOTOR CONTROLS

continued from page 130



AN OIL-IMMERSED SWITCH of this type is useful for dusty or moisture-laden atmospheres common in the rock industry

or frequent starting, more frequent inspections will be necessary.

Correct renewal parts should be readily available for prompt replacement when needed. The most satisfactory results are usually obtained with parts made by the manufacturer of the original equipment.

Keep the control clean. Most controls in rock products plants operate in a natural environment of moisture or dust-laden air. As a result, an accumulation of foreign material is almost always present. Dust and dirt in controls not only impair the operation of moving parts, but can also provide paths of conducting material which can eventually cause short circuits. Dust on contacts and interlocks may prevent proper circuit operation.

Dry dust and dirt can be blown off with compressed air. Greasy dirt can be removed with a nontoxic cleaning fluid.

Keep connections tight. Periodic inspections of terminals and connections are necessary. Loose connections cause poor contacts of high resistance. Copper oxide—an insulating material—builds up between the surfaces, resulting in even higher resistance. The higher resistance causes heating and more oxidation. This cumulative effect of increased resistance and heating eventually results in failure of the parts concerned. A loose connection on a thermally operated device, such as a thermal overload relay, can cause premature operation of the device.

Resistor connections have a tendency to loosen more readily than most apparatus because of their inherent high operating temperatures. The alternate heating and cooling tends to loosen the bolts that clamp the wires to the terminals.

Contacts require more maintenance than most other control parts. Every time the contactors and relays operate, their contacts open or close and are subject to mechanical wear and electrical burning. They may require considerable maintenance, depending on the operating conditions. It is very easy to inspect these contacts weekly or monthly. Some of them can and should be dressed with sandpaper or a fine file. Contact springs and spring pressure and wear allowance should be checked periodically according to the manufacturer's specifications.

A common error is replacement of contacts that have been roughened by service because it is felt that they will not carry the load. Unless there is a large projection on one of the surfaces, roughened contacts carry current as well as smooth contacts. If contacts are no rougher than coarse sandpaper, they will operate satisfactorily.

Large contacts are generally made of copper, and small contacts—such as those used on relays, interlocks, etc.—are usually made of silver. Copper contacts are subject to formation of copper oxide on their surfaces which must be removed periodically, although the contacts will usually be kept clean enough for good service by the slight rubbing and burning action that occurs as they operate. If contactors remain closed for long periods of time, special alloy contacts may be necessary. Check with the manufacturer.

Since silver oxide is a good conducter, it is not necessary to dress silver contacts to remove the oxide. Never file silver contacts—it doesn't take much filing to destroy their usefulness.

Premature failure of contacts can be caused by

Please turn to page 136

Gardner-Denver RP600 rotary portable compressors at work on sewer job.

Work 'em anywhere—in any weather Gardner-Denver rotary portables can take it

You can depend on Gardner-Denver rotary portable compressors to deliver the air you need in any weather—any climate, any altitude. They are ruggedly built, run smoothly, cost little to maintain. Six capacities from 85 to 900 cfm. Write for Bulletin RC-1. See your Gardner-Denver distributor soon.

All-weather operation—assured by efficient cooling system.

No dry starts in cold weather—clutch on RP125 and larger sizes assures full lubrication when compressor is engaged.

Thrifty—"THRIFTMETER"® fuel control regulates engine to meet air demands.

Easy to maintain—rotors and blades can be inspected and changed in minutes.

Gardner-Denver RP900 rotaries provide power for 5½" drills on Niagara power project.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

Enter 1298 on Reader Card

ADVANCED PLANT DESIGN STANDS 11-YEAR TEST FOR LOW COST PRODUCTION

Half-mile long Barber-Greene belt conveyor system runs on original idlers, cuts handling costs at Elmhurst-Chicago Stone Co. plant

"Our maintenance cost per ton on the Barber-Greene conveyor system has been extremely low for 11 years, and not a single carrier has been replaced," says an Elmhurst-Chicago Stone Co. official. "We have been so satisfied with the operation of our Barbers Corners plant that we've virtually duplicated this layout at our Warrenville plant," he comments.

Hailed as an industry showplace when it started operation 11 years ago, the Barbers Corners truck shipping plant is still a model for low-cost production of sized aggregates.

Today, only two men are required to operate the plant. One directs production of concrete building aggregates, and a second man handles facilities producing asphalt mix aggregates.

Elmhurst-Chicago Stone Co. has been an aggregate producer for 77 years, and is currently operating four plants in the Chicago area.

Get this same lowest-cost-per-ton solution to your material handling problems by calling in your Barber-Greene Conveyor Specialist. He sells pre-engineered standardized conveyors plus 40 years of experience in designing and building specially engineered systems—a preferred combination throughout the industry.

Barber-Greene stackers are used both to fill truck-loading bins and to build stockpiles. All are power-propelled and operated by remote control.

Fully mechanized crushing, washing, and screening plant shows how Barber-Greene belt conveyors move materials through each phase of processing.

Aerial view of Barbers Corners plant shows how six Barber-Greene radial stackers build huge circular stockpiles that allow maximum storage capacity in minimum space.

SEND FOR NEW IDLER BULLETIN

New 44-page Idler Bulletin describes the more than 800 units available in the complete Barber-Greene line, tells how their years-ahead features bring longer life and greater economy to every job. Ask for your copy today.

Your belt conveyor equipment headquarters

Representatives in Principal Cities of the World

Barber-Greene BG

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Plants in DeKalb, Illinois..Detroit..Canada..England..Brazil..Australia

CONVEYORS • LOADERS • DITCHERS

ASPHALT PAVING EQUIPMENT

HOW TO CHECK MOTOR CONTROLS

continued from page 134

improper operation of the contactor or relay involved. Sluggish operation and burning of contacts may be caused by low voltage or by dirt and grease on bearing surfaces. Operating voltage that is too high can cause "slamming" of the contactor on closing. Contacts may then bounce open momentarily causing excessive burning.

Flexible shunts carry the load current from a stationary stud to the movable contact on a "clapper" type contactor. Since these shunts are subject to flexing each time the contactor operates, the strands tend to fray and break, reducing their current-carrying capacity. Replace damaged shunts promptly.

Arc chutes and barriers on contactors normally require little maintenance. Severe-duty applications, however, cause arc chutes to wear out, making periodic replacement necessary. Arc chutes should be carefully checked after any abnormal interrupting or when they have been subjected to vibration or shock. Be sure to position arc chutes properly when replacing them.

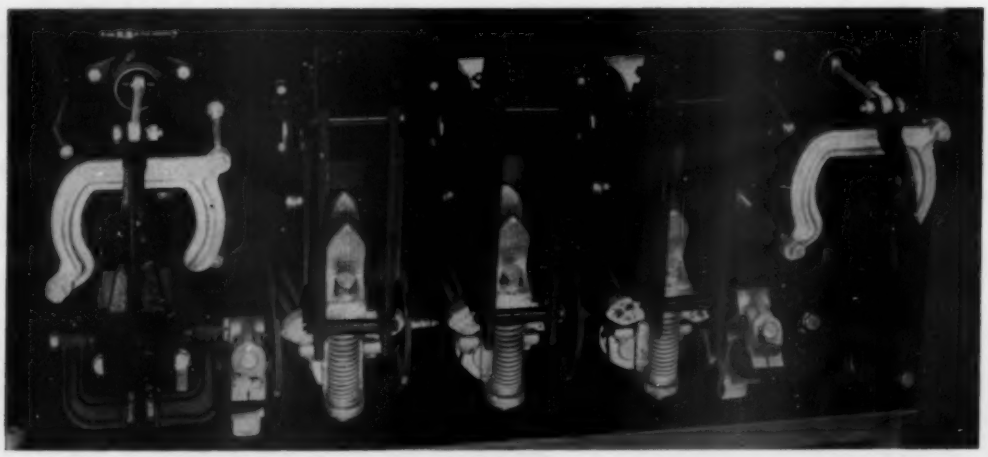
Coils of ac. magnets draw maximum current at the beginning of the closing stroke and minimum current when the movable armature is seated properly. If the ac. magnet is blocked partially open, overheating of the coil will occur and coil failure is the result. Ac. magnet coils operate satisfactorily between 85 and 110 percent of rated voltage. Either high or low voltage means poor contactor operation and shortened coil life. Dc. magnet coils may operate between 80 and 110 percent of rated voltage.

Normal ac. hum becomes a decided chatter in a defective ac. magnet. A common cause of chattering is a broken shading coil. This is a short-circuited turn imbedded in the face of the magnet which provides holding power to maintain the magnet closed when the voltage passes through zero. Dc. magnets are not subject to this zero voltage condition and, hence, are always quiet. Improper closing or seating of the ac. magnet, commonly caused by "rust" on mating surfaces, can also cause chatter.

Thermal overload relays should be checked periodically for dirt, corrosion and mechanical binding. The heater coil should be checked after a short circuit or overload condition, as it may be burned out or damaged under these conditions. If the heater coil is not properly positioned or if it is loose, the calibration of the relay will be affected.

Resistors are a common cause of concern in controls because of their inherent high operating temperatures. Note that 662 deg. F. above ambient temperature is a safe operating temperature for resistors and rheostats.

Since control equipment is generally designed to require the least possible maintenance, any chronic or premature failures should be immediately referred to the manufacturer. Send the manufacturer as much data concerning the failure as possible. Damaged parts, where possible, should be returned. A description of any unusual service conditions that exist is valuable; so is your opinion on what might have caused the failure. **END**



AIR BREAK contactors are used for the frequent starting of low-voltage motors

GET REAL PRODUCTIVITY—GET A GM DIESEL

Want to see the difference in Diesels? Put one in a quarry operation on a stepped-up production schedule, let it work 50 hours a week for a solid 10 months surrounded by abrasive rock dust—then check your books to see how it stood up.

That's what Mantorville, Minnesota's Stussy Construction Co. did with their first GM Diesel several years ago. The company now has nine GM Diesels powering loading cranes, a Joy compressor, Koehring Dumptor and a Cedarapids rock crushing plant. And Partner Don Stussy says, "Eventually we'll go all General Motors Diesel engines because of the savings available to us in parts as compared to other Diesels."

Don reports parts and service average about $95 per season on each engine with several years' usage—says that's a pretty good bargain "when you figure that's *total cost* for keeping each engine running day in and day out on stepped-up production a good deal of the time." He's looked at other makes—says if he switched "we'd be faced with hard starting and more frequent overhauls. We'd be upping our service repair costs at least 25% with other Diesels just figurin' on the difference between cost of parts alone."

If you've got an "engine killing" operation, you'll find it's just the job for a "Jimmy." Want to know more? Call your GM Diesel distributor—he's in the Yellow Pages under "Engines, Diesel"—or write direct.

GM DIESEL

DETROIT DIESEL ENGINE DIVISION,
GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
Parts and Service Worldwide

GM DIESEL ALL-PURPOSE POWER LINE sets the standard of Diesel productivity

Enter 1222 on Reader Card

STARSTEEL
HEAVY DUTY SPACE SCREENS

Here's why STARSTEEL better-made screens can cut your costs for screens and wasted downtime:

1. STARSTEEL's harder, tougher, specially alloyed high-carbon wire gives far longer resistance to abrasion and fatigue
2. STARSTEEL's tighter, more rigid weaving produces a perfectly flat surface that keeps openings accurate and prevents distortion
3. STARSTEEL's precision-formed hook strips or edge hooks permit tighter tensioning on machines, minimize breakage

Competitively priced STARSTEEL Screens step up production too; improve product uniformity and quality. *Write for catalog.*

QUICK SHIPMENT FROM STOCK
of most weaves, meshes, wire sizes

Star will produce screens or cloth from stainless or other steel alloys, Monel, brass, bronze, copper, aluminum or any metal that can be drawn into wire. Inquiries invited.

STAR WIRE SCREEN & IRON WORKS, INC.
2515 San Fernando Road • Los Angeles 65, Calif.

Subsidiary of Ludlow-Saylor Wire Cloth Company, St. Louis, Mo.

Enter 1260 on Reader Card

ROCKY'S NOTES

continued from page 20

There are, for example, at least two basic mineral fertilizers about which every one interested knows something—lime (calcium) and phosphate (phosphorous). We all know that applications of these minerals produce a vigorous growth of grass. More important, however, they result in a higher content of tryptophan (we don't attempt to pronounce it!). Tryptophan is a very important amino-acid—one that animals and man must obtain ready-made, since their own body cells are incapable of producing it, but plants under normal conditions do produce it. It is closely related to the growth hormone in plants and, hence, in animals. Hormones appear to be special kinds of body fluids which control the enzyme or cell functioning. It is, of course, well known that the growth of cancerous cells, or tumors, is somehow caused by lack of normal control of cell development, growth or multiplication. Hence, the importance of hormones, and the necessity, as it were, for keeping them in a normal or healthy operating condition. And that depends upon the food we eat; and the effectiveness of food we eat depends upon minute inclusions of certain mineral elements to form these hormones.

In a similar way, effects of the presence or absence of such mineral elements as iron, copper, sulphur, iodine, cobalt, molybdenum, magnesium, manganese, etc., may be evident in various specific diseases other than cancer. Livestock troubles are traced directly to the presence or absence of one or more of these elements. One might suppose that the absence of any one of these in the animals' food could be readily supplied by some additive, as is often done, but this is not always effective, since, as we well know in inorganic chemistry, one such element can substitute for another in many combinations. They even may be mutually exclusive, so that too much of one will exclude the necessary functioning of the other. Thus, mere chemical analysis of the food may mean nothing.

Our author takes catalase as an example because it "plays an immense part in microbial diseases and cancer." To learn something as to what "catalase" is, we refer to Agricultural Chemistry,† Vol. 1, reviewed in our Notes several years ago. Incidentally that book is very helpful in understanding the volume we are reviewing here. Catalase is what is termed an iron enzyme because iron is the principal energizing mineral in the molecule of the enzyme. Its main known function is to change hydrogen peroxide to water and oxygen ($2\ H_2O_2 \longrightarrow 2\ H_2O + O_2$). This is a kind of respiration and is just as important to life, apparently, as respira-

Please turn to page 140

†*Agricultural chemistry—A reference text*, by Donald E. H. Frear, Ph.D., Editor, Van Nostrand Co., Inc., New York, N.Y., 1950

These tracks tell why Moto-Loader output is high

Two Moto-Loaders® keep 35-ton trucks moving for Halloway Construction Co. of Milford, Michigan. Choose the ML-157 with 7000-lb. carrying capacity or the ML-153 with 6000-lb. carrying capacity. Either one will build your profits.

NO JOCKEYING

You use just one foot to speed instantly forward or backward. Hands are free for power steering, finger-tip control of bucket and power shift transmission. Real control balance.

NO WHEEL SPINNING

Moto-Loader balanced power is just right for maximum digging, minimum costly wheel spin. Balanced too with hydraulic capacity so all functions flow together for maximum output.

FASTER MANEUVERABILITY

No bounce or teeter on rough ground. Balanced weight distribution does it. This also lets Moto-Loaders travel with load at optimum height to save dump time at the truck.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN® ON THE MOVE

PLANTS: In Lorain, Elyria and Bucyrus, Ohio . . . **PRODUCTS:** Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity . . . **OUTLETS:** Lorain products sold and serviced by 249 distributor outlets throughout the world.

Enter 1243 on Reader Card

and for deep hole core drilling

It Will Pay You To Remember!

HARVEY DRILLING CO.

CONTRACT DIAMOND DRILLING that pays off.

Yes, your drilling dollars will be invested wisely with Harvey Drilling on the job. Whatever your drilling job . . . you'll find it pays to call in Harvey's diamond coring experts. Get the results you need . . . quickly, accurately and economically.

Hoffman Diamond Core Bits and Accessories for individual use are also available through Harvey Drilling.

Phone or Write for Estimates or Suggestions At No Charge.

HARVEY DRILLING COMPANY

902 East Main St., Clarion, Pa. Phone: Capital 6-7210

Enter 1237 on Reader Card

LIME . . . CEMENT KILNS

VULCAN OF WILKES BARRE CAN DESIGN & MANUFACTURE JUST THE TYPE YOU NEED

All equipment made by Vulcan must measure up to the standard of quality and responsibility it has taken 111 years to earn. Contact Vulcan today . . . estimates, constructive suggestions and preliminary drawings will be furnished (as far as possible) without obligation.

VULCAN IRON WORKS INC.

Wilkes-Barre, Pa. Cable Address: Vulworks

"The Oldest Name In Rotary Kilns."

Enter 1238 on Reader Card

ROCKY'S NOTES

continued from page 138

tion in the lungs when breathing—providing oxygen which, in turn, "burns" the food fuel to make the energy that keeps us alive and active.

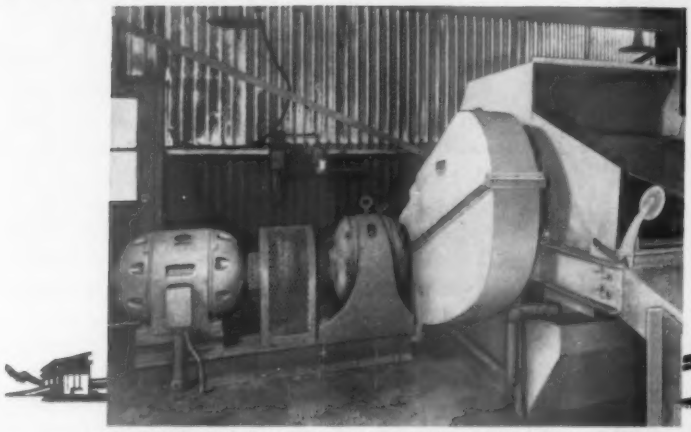
The scene of catalase activity is the blood and liver, and its functions are of the greatest importance, since it is the blood stream that carries either energy or disease to all parts of the body. However, our author shows that it is not enough to have sufficient iron in this enzyme. It will not function satisfactorily unless copper also is present. In the case of infectious disease, the copper content of the blood increases proportionately to the iron; and this is shown to be a defense mechanism against the disease. Hence, unless our food or drink has made the iron and copper available, our defense is let down, and our troubles begin.

It is customary to ascribe the cause of cancer and other diseases which baffle medical men to "viruses." Viruses are dead things and can exist and multiply only in or on living cells. Hence when they invade living cells, there is a struggle for survival. Medical researchers try to find specific viruses in cancer cells, but have found these hard to identify. The reason, our author suspects, is that the abnormal cell manufactures its own virus, and this happens when there is a deficiency of catalase, and ozygen peroxide is permitted to be formed in this blood enzyme. That, of course, is the merest and simplest sketch of the kind of the subjects discussed by our author. It is not only the food we eat but our drinking water which can throw our necessary mineral balance out of order.

In concluding his discussion, our author says: "What must never be forgotten is that diseases are created chiefly by destruction of the harmony existing between the soil elements. The great tragedy of modern techniques is the complete disruption of this harmony by new cultural methods .... The importance of this harmony among the soil elements grows day by day as agronomic methods being practiced threaten to throw out of gear the mechanisms of the human cell. Increasing human population and the enormous pressure being exerted by organized masses of city-dwellers on powerless agricultural communities are gradually reducing the agricultural population, which is forced constantly to increase its output, thereby producing more food more inexpensively, without any thought for its biological values. The result can be achieved only by use of ever greater quanties of mineral chemical fertilizers. The fertilizer, however, must be applied judiciously—which is not done at present. Today, indeed, three times as much of all the elements in the soil are being removed [as are being replaced], but generally only

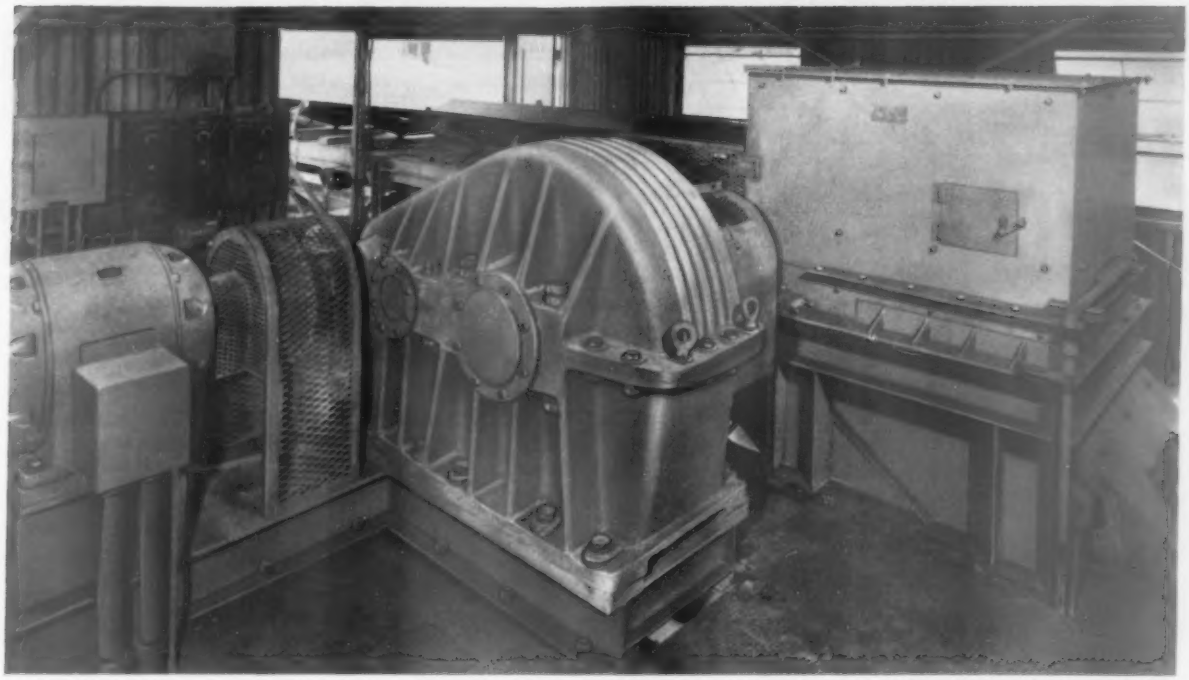
Please turn to page 142

FOOTE BROS. DRIVES IN THE CEMENT INDUSTRY



...Move Cement Clinker at 2000 TONS PER HOUR

LINE-O-POWER Reducer Driving Tunnel Belt feeding Final Conveyor Belt.



MAXI-POWER Reducer Driving Final Conveyor Belt, Universal Atlas Cement Plant, Buffington, Indiana

Lake carriers get a fast turn-around when they load clinker at United States Steel Corporation's Universal Atlas Cement Plant at Buffington, Indiana, because the clinker loading belts driven by Foote Bros. Reducers have a maximum capacity of more than 4 million pounds per hour!

The 48" wide, 2445 ft. long inclined Final Conveyor Belt, driven by a Foote Bros. MAXI-POWER Parallel Shaft Drive, which is fed by two 36" wide Tunnel Belts equipped with LINE-O-POWER Drives, moves the fused raw material from mountain-high stock piles into the holds of boats at the rate of 2000 tons per hour.

This is tough, demanding service. Drives are subjected to massive shock and maximum peak loads... yet the Foote Bros. Drives have never been shut down for emergency repair or maintenance!

Dependability like this is a standard by-product of Foote Bros. drive know-how. Why not take advantage of our more than a century of experience and specialization in building high quality transmission products?

There's a Foote Bros. Drive made to meet your power transmission requirement. Ask your nearby Foote Bros. Authorized Distributor for information or assistance concerning your power transmission problems. He's ready to help you.

FOOTE BROS. GEAR AND MACHINE CORPORATION

4589 South Western Boulevard, Chicago 9, Illinois

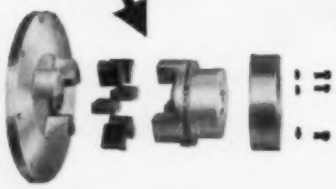
POWER TRANSMISSION DRIVES

Enter 1223 on Reader Card

This Space-Saving Coupling Cuts Costs and Maintenance

Lovejoy

Type CF



For Connecting Driven Unit Direct to Flywheel

Cuts Cost:

1. Saves an average of twenty-seven dollars per unit over conventional couplings by eliminating stub shaft and shortening base requirements.
2. Minimizes initial installation expense in two ways, because it can be installed quickly and because it greatly simplifies alignment.

Cuts Maintenance:

1. Completely unaffected by dirt, dust, mud, water, oil and weather elements.
2. Never requires lubrication.
3. Coupling, itself, is maintenance-free—no complicated mechanisms, no periodic adjustments needed, all parts are in plain sight for quick inspection.
4. Cushions can be changed without disturbing driving or driven unit and on non-reversing loads can be reversed or advanced for double life.
5. Outlasts other couplings—cushions transmit load to eliminate wear on metal jaws.

Get full facts on the CF Coupling. Request Bulletin 606.

Lovejoy

First Name in Flexible Couplings

LOVEJOY FLEXIBLE COUPLING CO.

4822 WEST LAKE STREET • CHICAGO 44, ILLINOIS

Enter 1259 on Reader Card

ROCKY'S NOTES

continued from page 140

four, at the most seven, of these elements are being replaced." It is pointed out that the present practice of heavy applications of nitrogenous fertilizers—the tremendous increase in the use of ammonia in this country, for example—is hastening the exhaustion of these necessary mineral elements. The result is that the increase in abundance of crops is accompanied by a decrease in their nutritive value.

Our author quotes a famous German authority on cancer: "The role of nutrition in protection against cancer has recently been confirmed by new observations. We are justified in concluding that nutrition, whatever its nature, can favor cancer or, on the other hand, protect against it . . . ." The author's own conclusion is that "the primary aim must be to protect; that is, to grapple with the causes, rather than to concentrate on curing the disease which, after all, is only a consequence. Attention must be concentrated particularly on the principal factor in this protection: nutrition and the soil that creates the food."

In our own humble opinion the day may not be too far distant when the most vital and important industry of all will be the grinding of bedrocks of the Earth's crust to make soil to spread upon worn out crop lands, just as limestone is used today. The original Earth's crust contains all the minerals in the proportions from which life has evolved during millions of years. Man may perhaps process these rocks to obtain concentrates of the needed mineral elements, but he can never be sure he redistributes them in Nature's own best proportions. The only alternative is that life adapt itself to this new soil environment, which would take many generations and cost millions of lives. **END**

Raymond ROLLER MILL

...for the modern dry-processing of CLAYS

THE Raymond Roller Mill with its proven advantages and rugged dependability is recognized as the standard pulverizing unit in many fields of clay products manufacture.

It provides a method of dry-processing whereby the moisture is removed simultaneously with the grinding of the clay . . . at a great saving in time and material handling.

ITS PRINCIPAL FEATURES INCLUDE:

1. Drastic reductions in labor requirements.
2. Close control of variables, which improves product quality.
3. Completely automatic, dust-free operation.
4. Reduction of maintenance problems.

Raymond Roller Mill equipped with Flash Drying accessories for drying and grinding simultaneously.

• • • • • •

In a typical installation for a wall tile manufacturer, the mill receives clay containing 5% moisture, and delivers 10 tons per hour of dry product at a fineness of 98% minus 200 mesh. In a pottery plant, the Roller Mill is dry-grinding the clay at 90% minus 200 mesh, and delivering 8 tons per hour to a pug mill where the maximum requirement of water is added ahead of the extrusion operation.

The Raymond Roller Mill is available in a wide range of capacities, and can be set up with Flash Drying accessories for simultaneously drying, grinding, classifying and conveying the product to storage.

Write for Catalog No. 79 describing Roller Mills, and for Catalog No. 87 with data on Imp Mills, covering a wide range of applications in drying-grinding problems.

COMBUSTION ENGINEERING, INC.
Raymond Division

1108 W. BLACKHAWK ST.
CHICAGO 22, ILLINOIS

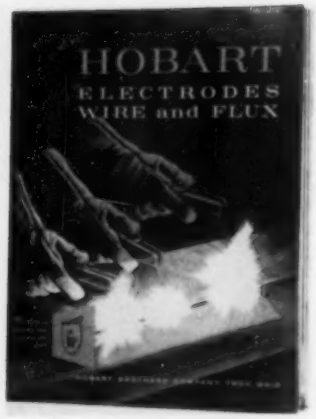
SALES OFFICES IN PRINCIPAL CITIES

Combustion Engineering-Superheater Ltd., Montreal, Canada

Enter 1267 on Reader Card

NEW LITERATURE

FOR FREE INFORMATION on these items, simply fill out and mail postage-paid Reader Service Card found elsewhere in this issue



Welding electrode catalog

HOBART BROS. CO. has made available a comprehensive welding electrode catalog. It covers the manufacturer's line of welding electrodes, gas welding rod, non-consumable electrodes, submerged arc welding flux and automatic welding wire. In addition to a handy application diagram, the following information is given for each electrode: description, color code, outstanding features, mechanical properties, typical chemical analysis of weld metal, approvals, conformances, size, current range, packaging, procedure and typical applications. The catalog also offers a technical section.

Enter 600 on Reader Card

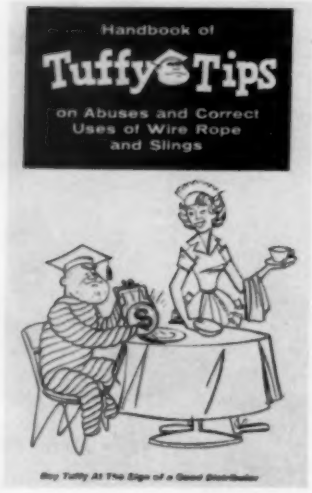
Steel castings

THE USE OF STEEL castings in the mining industry is featured in a booklet published by the Steel Founders' Society of America. The 28-page booklet presents the multitude of uses for steel castings. Line drawings of more than 200 representative steel castings, selected from over 1,000 photographs and references, are contained in the booklet.

In addition to the section devoted to the use of steel castings in the mining industry, the booklet also explains and illustrates the use of cast steel parts and components in these particular fields: machine tool, construction and construction equipment and materials handling.

Enter 601 on Reader Card

Wire rope booklet



UNION WIRE ROPE CORP. has compiled a 28-page booklet that gives rope and sling-saving information. The abuses and correct uses are illustrated with cartoon caricatures.

Enter 602 on Reader Card

V-belt catalog

THE BOSTON WOVEN HOSE & Rubber Div. has just issued a new catalog featuring pre-engineered data for Bost-Ron v-belts. The catalog has been especially created so that the pre-engineered tables are much easier to use than the previous editions. In addition to the general information, v-belt drive selection tables, hp. rating tables and matching data and product information is included in the 64-page catalog.

Enter 603 on Reader Card

Power shovel

A 24-PAGE CATALOG on Lorain Model L85A power shovel has been released by the Thew Shovel Co. This power shovel is available also as a crane, clam, dragline and hoe. The booklet covers details of the machine's construction and pictures of it at work.

Enter 604 on Reader Card

Engine catalog

INTERNATIONAL HARVESTER CO. has published a 3-color, 16-page catalog describing their new 6-cylinder diesel engine. This 4-cycle engine is available in turbocharged or naturally aspirated models. Both versions are direct-start, direct-injection engines, with only minor differences in compression ratios, camshaft profiling, timing and piston design.

Enter 605 on Reader Card

Spiral Conveyors

JEFFREY MANUFACTURING CO. is distributing Catalog 951, designed to aid in selecting spiral conveyors. The 56-page book gives capacities, horsepower requirements, sizes and accessory equipment.

Enter 606 on Reader Card

(Continued on page 146)

Enter 1216 on Reader Card

The new Bucyrus-Erie 30-R Rotary Blast Hole Drill gives you more feet of hole per dollar invested than any other drill in its class . . . and isn't that what you *really* want from a drill?

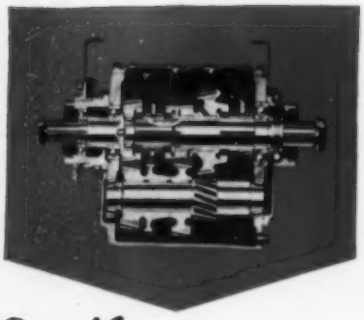
WHAT MAKES IT SO GOOD?

It comes naturally. The 30-R is patterned after two of the most popular and productive rotary blast hole drills in the business — the famous Bucyrus-Erie 40-R and 50-R. Its performance advantages include 30,000 lb pulldown force . . . continuous drilling for 21 feet, 3 inches before adding new pipe . . . infinite selection of speeds from 0 to 100 rpm . . . instant stabilizing and leveling with three hydraulic jacks . . . *plus* stamina that just won't quit.

Let your Bucyrus-Erie distributor show you many other reasons why the new 30-R is so good, or write Bucyrus-Erie Company, Dept. 1B60, South Milwaukee, Wisconsin, for descriptive literature.

BUCYRUS ERIE

MOST RESPECTED NAME IN THE INDUSTRY



Specify

FULLER

Specify the

MODEL

For medium-heavy duty trucks and tractors specify the

FULLER '65 SERIES

3-SPEED AUXILIARY

- High capacity
- Widest range of ratios
- Top-mounted power take-off optional
- Low initial cost, reduced maintenance
- Available from all truck manufacturers on specification

65 SERIES (Medium-heavy-duty) RATIOS

MODEL	SPLITTER RATIOS High	Intermediate	DEEP REDUCTION Low
3-A-65	.754	1.00	2.221
3-B-65	.804	1.00	1.239
3-C-65	.754	1.00	1.239
3-D-65	.804	1.00	2.221
3-E-65	.804	1.00	1.74
3-F-65	.754	1.00	1.74
3-G-65	1.00	1.32	2.221
3-H-65	1.00	1.32	1.74

Specify

Specify the **MODEL**

FULLER MANUFACTURING COMPANY
(Transmission Division)
KALAMAZOO, MICHIGAN
Subsidiary EATON Manufacturing Company

Enter 1279 on Reader Card

NEW LITERATURE

(Continued from page 144)

Chains and sprockets

LINK-BELT CO. has just released a 44-page booklet in which are listed stock sizes of the company's roller chains and sprockets. The book lists over 2,000 types and sizes of stock roller chains and sprockets including standard and double-pitch power transmission chains, a selection of conveyor chains and attachments and a complete line of sprockets.

Enter 607 on Reader Card

Countersink tools

THE TREMENDOUS ADVANTAGES of countersinking belt fasteners can be realized only if Flexible Steel Co.'s new tools are correctly used. They have issued a 4-page folder, Bulletin #F-115, that gives clear and explicit instructions for making precise cuts in the top cover of a conveyor belt. This precision is necessary to assure that at least 1/16 in. of rubber cover remains in the completed countersink to protect the duck carcass of the belt.

Enter 608 on Reader Card

Oil-fired burner for rotary kilns

CLARE J. HOFFMAN, INC. has issued a brochure that includes the inventor's description of the construction and advantages of the kiln burner, pertinent technical data, a drawing of the burner tip and photographs of an actual installation at the Colleferro plant near Rome, where the inventor, Mr. Calzolari, is the director in charge. The construction of the burner is quite simple and it is essentially a rugged and maneuverable unit. It can be moved into and out of place quickly and can be adjusted with respect to the remainder of the kiln parts.

The burner is intended to improve the operation of an oil-fired kiln burner to the point where it is even more efficient than known coal-fired burners. Until this time, the burner has been used only in Italy. It is now available to producers in North and South America and Great Britain.

Enter 609 on Reader Card

Belt conveyor idlers

HEWITT-ROBINS, INC. has issued a 48-page engineering and product information booklet on belt conveyor idlers. Included are details of construction, comparison of 10 competitive designs, selection, procedure and examples, engineering tables, dimensions and specifications. The catalog illustrates and describes the basic types of idlers used in all types of service.

Enter 610 on Reader Card

Magnetic pulleys

FACTORS GOVERNING the selection of electromagnetic pulleys or nonelectric ceramic-type magnetic pulleys are fully explained in catalog #C-2000 recently issued by Dings Magnetic Separator Co. Included are the applications of the two types of magnetic pulleys and a detailed chart showing how to select the proper magnetic pulley in relation to belt speed, belt width and burden.

Enter 611 on Reader Card

Dracco dust bulletin

DRACCO DIV. OF FULLER CO., manufacturer of dust control equipment, discusses ways to prevent one of the toughest air pollution problems in industry in their 12-page bulletin. The bulletin presents illustrated application data describing how the company's glass-bag filters provide efficiency in cleaning hot, corrosive gases in three plants representative of the cement and metallurgical industries. Another section of the bulletin deals with methods of cleaning glass fabric bags.

Enter 612 on Reader Card

Rotary compressor

LE ROI DIV., Westinghouse Air Brake Co. has published a bulletin describing features of its portable rotary compressor. The two-color publication cites modulating control, one-valve operating pressure change, thermo-by-pass valve and low engine oil cut off switch.

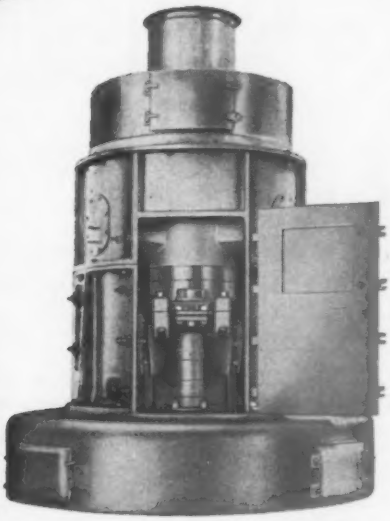
Enter 613 on Reader Card

(Continued on page 148)

WHERE UNIFORM FINENESS IS DESIRED...
WHERE MINIMUM MAINTENANCE IS REQUIRED

The Bradley Pneumatic Hercules Mill provides uniform grinding of limestone, phosphate rock, etc. from 20 to 325 mesh. Its durable, non-clogging vibratory feeder practically eliminates manual feeding . . . allows continuous operation of the mill at its maximum capacity. And because the Bradley Pneumatic Mill is installed on a foundation flush with the floor line, it not only reduces foundation costs but simplifies inspection and maintenance. All grinding parts are also easy accessible . . . and both grinding die ring and roll assemblies can be removed without dismantling the mill. Add rugged construction to this, and you have a mill where dependable, uniform grinding is combined with an absolute minimum of replacements and downtime.

See Chemical Engineering Catalog or for complete information, write for Catalog No. 63



BRADLEY PNEUMATIC HERCULES MILLS

BRADLEY PULVERIZER CO.

superior grinding equipment since 1891

LONDON ALLENTOWN, PA. BOSTON

Enter 1268 on Reader Card

NEW SCHRAMM C-42 CRAWLER ROTADRILL SLASHES TONNAGE COSTS!

1 you get a completely self-contained, self-powered crawler unit... with air compressor built in

one man drills and drives

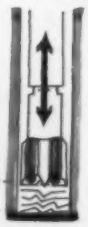
2 you cut cost of:

separate wagon drill and compressor

one or two extra men

3 with a Rotatool **you get:**

blow at bottom of hole



deeper, faster penetration

lower cost per ton removed!

4 compare:

	MODEL C-42 ROTADRILL	CRAWLER WAGON DRILL
Air required	250 cfm	600 cfm
Hole size	4½"	4½"
Drill steel size	3¼"	2"
Equipment cost	$29,825.	$16,200 for crawler wagon drill $18,545 for 600 cfm compressor $34,745 total
Men needed	One	2 or 3

Write for full information on new Schramm Model C-42 Crawler Rotadrill and get name of your nearest dealer.

Schramm

ROTADRILLS AND ROTATOOLS

746 North Garfield Ave., West Chester, Pa.

Enter 1278 on Reader Card

NEW LITERATURE

(Continued from page 146)

Bucket elevator catalog

ANDREWS MACHINE CO. has recently announced the publication of a new catalog on bucket elevators, complete with all specifications. The catalog covers both belt and chain elevators in single and double-casing design. Three standard series are included in a range of capacities from 280 to 8835 cu. ft. per hr. Formulas are also furnished to determine variations that may be desired to meet special requirements. Recommendations are given on the types of elevators best suited for the handling of 65 different materials.

Enter 614 on Reader Card

Complete plants and equipment

CINDACO INC. has just released an illustrated brochure describing their services and equipment for the aggregate industry. These services include research, engineering and design of complete processing plants for aggregates, concrete and asphalt. This organization is staffed to build and erect entire plants, and to specify and fabricate all required processing equipment.

Enter 615 on Reader Card

Covered hopper car

PULLMAN-STANDARD has released a booklet describing the PS-2 covered hopper car. PS-2 comes in four sizes to fit any shipper's needs. The booklet describes features that mean longer car life, easier cleaning, less maintenance—more revenue car miles.

Enter 616 on Reader Card

Stationary air compressor

ATLAS COPCO has recently released a 4-page folder describing its stationary air compressor line—including data on its "Twin-Air" rotary screw-type machines which deliver up to 19,400 cfm. at 100 psi.

Enter 617 on Reader Card

Diesel engine maintenance

CUMMINS ENGINE CO., INC., has prepared a big booklet graphically telling power users how to increase equipment availability, reduce operating costs and obtain better engine performance.

Enter 618 on Reader Card

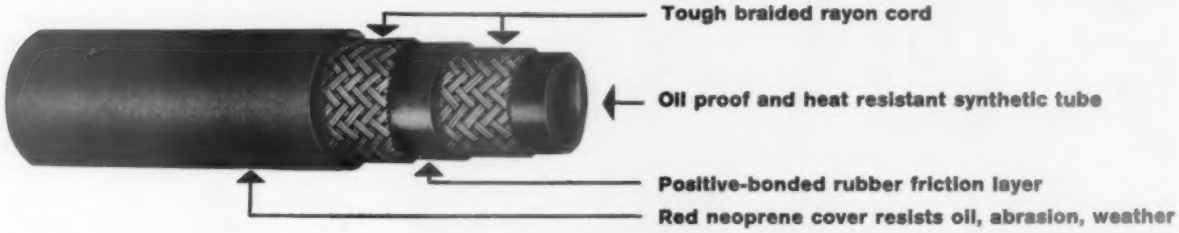
(Continued on page 150)

Quaker Thermoid

VERSICON

All-Purpose Hose

The hose that wears like a truck tire!


Tough braided rayon cord
Oil proof and heat resistant synthetic tube
Positive-bonded rubber friction layer
Red neoprene cover resists oil, abrasion, weather

Work like this is rough on hose, but Thermoid-Quaker "Versicon" takes it in stride. "Versicon" hose is built for high air pressures, up to 300 psi. It's built to withstand dragging over jagged, abrasive rock. It resists oil, baking sun or freezing cold. It's the heavy gauge, tough neoprene cover that takes this kind of surface abuse.

The tough braided rayon reinforcement gives it the extra strength to withstand high working pressures.

The tube is a specially compounded synthetic that's oil proof, heat resistant and will not flake or chip.

"Versicon" is made in all sizes up to 1½" and in lengths up to 500' in some sizes. Also in one, two or three braid constructions for use with water, oil, grease, solvents, sprays and mild chemical solutions.

See your experienced Thermoid Division Distributor for the right hose for your requirements, or write: *Thermoid Division, H. K. Porter Company, Inc., 200 Whitehead Road, Trenton 6, N. J.*

THERMOID DIVISION PORTER **H.K. PORTER COMPANY, INC.**

PORTER SERVES INDUSTRY with steel, rubber and friction products, asbestos textiles, high voltage electrical equipment, electrical wire and cable, wiring systems, motors, fans, blowers, specialty alloys, paints, refractories, tools, forgings and pipe fittings, roll formings and stampings, wire rope and strand.

Enter 1276 on Reader Card

Enter 1274 on Reader Card

NEW LITERATURE

(Continued from page 148)

Control panels

THE FULLER CO. has available a 12-page booklet describing the selection of the right control panel for a wide variety of automatic materials handling systems.

Other applications illustrated and described are panel control of a pelletizing plant for taconite, raw material feed in a cement mill, handling a number of chemicals and alumina.

Also shown is a panel used for control of batch or continuous processing in a cement mill.

Enter 619 on Reader Card

Stationary compressor

DESIGN, COMPONENTS, intercooling, lubrication, motor mountings and accessories are fully illustrated and explained in a new booklet just released by Joy Mfg. Co. on stationary compressors. Included also are specifications on three basic models of the semi-radially constructed units ranging from 1,385 cfm to 1,948 cfm at 125 psi.

Enter 620 on Reader Card

Spiral classifiers

MINE AND SMELTER SUPPLY CO. has published a 28-page catalog on Atkins spiral classifiers. The catalog includes complete information on principle of operation, construction details, capacities, drawings for general plant layout purposes and detailed information on applications in open and closed circuit operation.

Enter 621 on Reader Card

Condensation pumps

AMERICAN AIR FILTER CO., INC. has released a bulletin describing its condensation pump line. Six basic condensation pumps are described and illustrated, along with data specifications, operating details and drawings.

Enter 622 on Reader Card

Tractor rails

RANKIN MFG. CO. has released a new 4-page data sheet, #102, giving step-by-step procedure, with diagrams, showing the proper method to rebuild tractor rails.

Enter 623 on Reader Card

END

ARMCO DREDGE PIPE

Helps Widen Louisville-Portland Canal

Armco Special Analysis Steel Pipe will carry 2½-million cubic yards of mixed sand and silt for the Louisville-Portland Canal dredging job near Louisville, Kentucky. The canal is to be widened from 200 feet to 500 feet.

The dredging contractor, Dunbar and Sullivan Dredging Company, is using 1000 feet of 22-inch inside diameter Armco Pontoon Pipe in 40- and 80-foot lengths. Wall thickness of the pipe is .438". As an extra service, the ball joint, seen at left in photo, was welded on the pipe before it left the factory. Accessories used in this and many other dredging operations throughout the country are Armco standard fabricated elbows and Armco standard shore pipe.

Armco Special Analysis Steel Pipe is made of special steel developed by Armco to withstand abrasive materials and rough service. Write us for the free illustrated folder on Armco Special Analysis Steel Pipe. Armco Drainage & Metal Products, Inc., 6790 Curtis Street, Middletown, Ohio.

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division
The National Supply Company • The Armco International Corporation
Union Wire Rope Corporation

Enter 1224 on Reader Card

NEW PATENTS

by OLIVER S. NORTH

RECENTLY ISSUED PATENTS ON NONMETALLIC MINERALS*

Vermiculite

U. S. 2,921,862—An acoustical plaster for walls and ceilings comprises calcined **gypsum,** expanded **vermiculite** or **perlite, bentonite,** an air entraining agent such as vinsol resin and a surface active agent. The acoustical properties of this plaster are improved by adding a fibrous material, preferably **asbestos.** (to G. Sucetti)

U. S. 2,922,719—Method for making improved clay brick or other structural units having enhanced strength, a low shrinkage factor and carefully controlled bulk density, using exfoliated **vermiculite,** expanded **perlite** or **expanded clay** as a component of the mix. (to G. C. Robinson; assigned to Zonolite Co.)

U. S. 2,923,659—An insecticidal product having a desirable high bulk density and adapted to be sprinkled in infested areas is formed by mixing crude, unexfoliated **vermiculite** into an emulsion consisting of malathion, peanut oil, water and an emulsifier, and then aging the mixture to allow the insecticide to penetrate between the laminae of the vermiculite particles. (to G. E. Ziegler and L. P. Fotsch; assigned to Zonolite Co.)

Canadian 589,604 — Method for manufacturing heat-insulating shapes consisting of exfoliated **vermiculite** or expanded **perlite** mixed with a binder and amosite **asbestos fiber.** In this process the insulating properties of the lightweight aggregate are retained, yet the product is produced rapidly. (to W. L. Stafford, K. F. Greene and B. H. Smith; assigned to Johns-Manville Corporation)

Canadian 591,118—Jig process for delaminating and concentrating crude **vermiculite** ore. (to J. B. Myers; assigned to Zonolite Co.)

*Copies of United States patents are available at a cost of 25 cents each (photostat copies of foreign patents at 30 cents per page) from The Commissioner of Patents, Washington 25, D.C. For convenience, coupons, each good for one copy of any patent, may be purchased from that official at the rate of $5.00 per 20-coupon pad or $25.00 per 100-coupon pad.

Aggregates

U. S. 2,925,831—In the making of heavy-duty traffic-bearing road surfaces, broken **volcanic cinder** or **volcanic scoria** is applied with a bond over a previously prepared road surface. Another layer of adhesive is applied and, finally, a dough-like mixture of fine cinder or scoria and the adhesive is applied to form a smooth surface. (to L. G. Welty and J. N. Hinkson; assigned to Rock Fabricates & Mining Corp.)

U. S. 2,926,988—A protective cover material for open tanks of petroleum and like volatile materials is made from **pumicite** by floating and recovering the particles having closed cells, and using these low bulk density particles as a layer covering the petroleum. (to J. R. Hurley; assigned to Phillips Petroleum Co.)

Fluorspar

Canadian 588,524—In the separation of **cryolite** from **fluorspar,** finely divided dry ore is pulped in an aqueous solution of sodium fluoride at a pH of 4.5-6.5, and the pulp subjected to froth flotation in the presence of a fatty acid collector. A fluorspar-rich froth and a cryolite-rich underflow are produced. The silica gangue present comes off with the fluorspar froth. (to L. E. Goldenhar, I. Mockrin and F. M. Doorley; assigned to Pennsalt Chemicals Corp.)

Canadian 589,342—Method for recovering synthetic anhydrite as a byproduct from the manufacture of hydrofluoric acid from **fluorspar** and sulfuric acid. The material is suitable for use in the making of plasters and mortars. (to H. Reimers; assigned to Rofusa N.V.)

Canadian 590,594—Process for deacidifying anhydrous calcium sulfate produced as a byproduct in the manufacture of hydrofluoric acid by decomposition of **fluorspar** with sulfuric acid. (to G. Calligaris; assigned to Vic Italiana S.p.A.)

Clays

U. S. 2,915,412—Process for producing a **kaolin** slip of desired consistency. Dry clay is fed continuously into a whirling pool of water, along with recirculation, until a slurry of high solids content is obtained; Kaolin is fed to the vortex more slowly in the final stages. This method is especially useful for paper makers who have received the kaolin in dry form and must put it into slurry form for use. (to S. C. Lyons; assigned to Georgia Kaolin Co.)

U. S. 2,916,214—In a batch method for blunging crude **kaolin,** a measured quantity of water is fed into the blunger along with the kaolin, and the slip circulated and recirculated from the blunger to the water tank. Necessity for weighing the batch of clay is eliminated by simply using a tank of predetermined size, based on the size of the clay batch and the desired solids concentration of the finished slip. (to S. C. Lyons; assigned to Georgia Kaolin Co.)

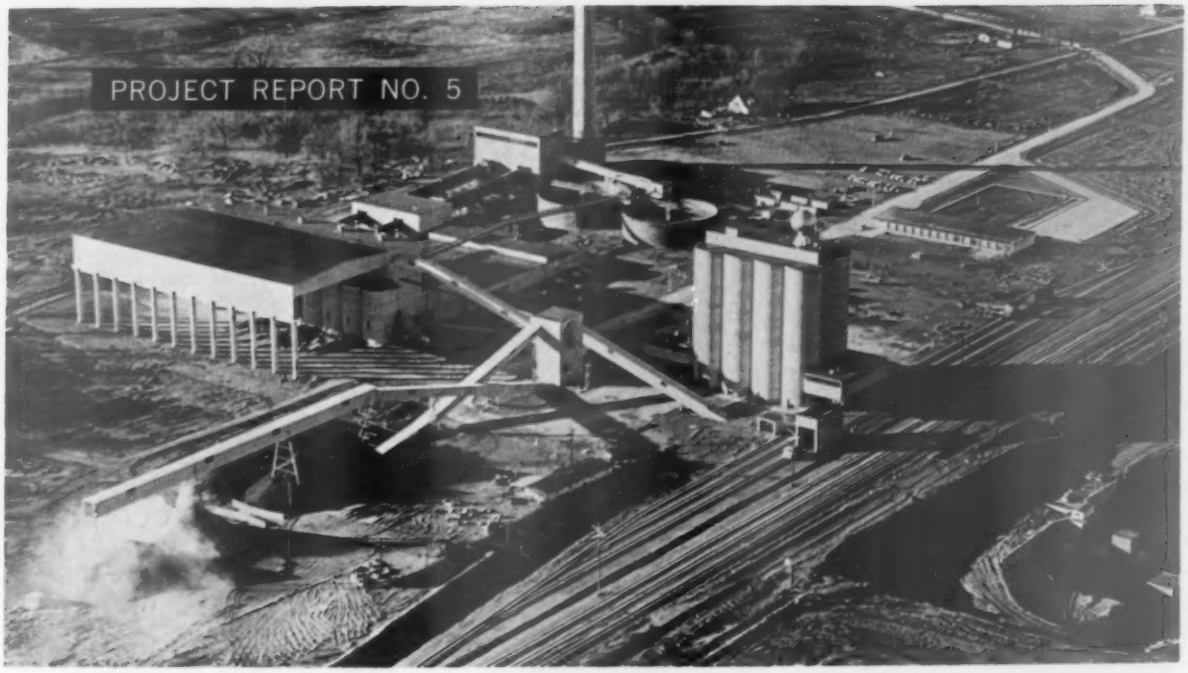
Sylvinite

U. S. 2,931,502—Simple yet effective two-stage froth flotation method for producing from crushed and deslimed **sylvinite** ore a high-grade sylvite concentrate in coarse size range and a high-grade standard size sylvite product. (to E. A. Schoeld, J. D. Nabors and J. S. Reiter; assigned to Potash Co. of America)

Perlite

U. S. 2,931,733—A one-coat plastering composition for producing a strong and trowellable wall surface comprises optimum proportions of fine and coarse expanded **perlite,** hydrated **lime, gypsum** plaster, plastic resin glue, **borax** and **white portland cement.** (to K. B. Covert and U. M. Brist; assigned to Pabcor, Inc.)

(Continued on page 154)



DARIN & ARMSTRONG BUILDS WORLD'S MOST MODERN PLANT ON SCHEDULE... WITHOUT OVERTIME

6 million barrel capacity plant now producing

A milestone in cement plant construction was achieved with the recent completion of the giant, new Dundee plant.

The design of this plant, incorporating the largest mills and kilns ever installed in this country, plus a concentration of all buildings and equipment in a relatively small area, presented many new and unusual problems.

Darin & Armstrong completed the job as designed . . . on schedule . . . *without overtime.*

If you're planning to build a new plant, or to modernize your present facilities, we'd welcome the opportunity to tell you about our men, our equipment, our ability and our experience in combined building and machinery installation projects.

For Project Report No. 4 see May 1960 issue

◀ Erecting 75-ton girder for storage hall crane at 80′ elevation. Lifts such as this, performed with Darin & Armstrong's mobile lifting equipment, contributed to the savings in time and cost of the project.

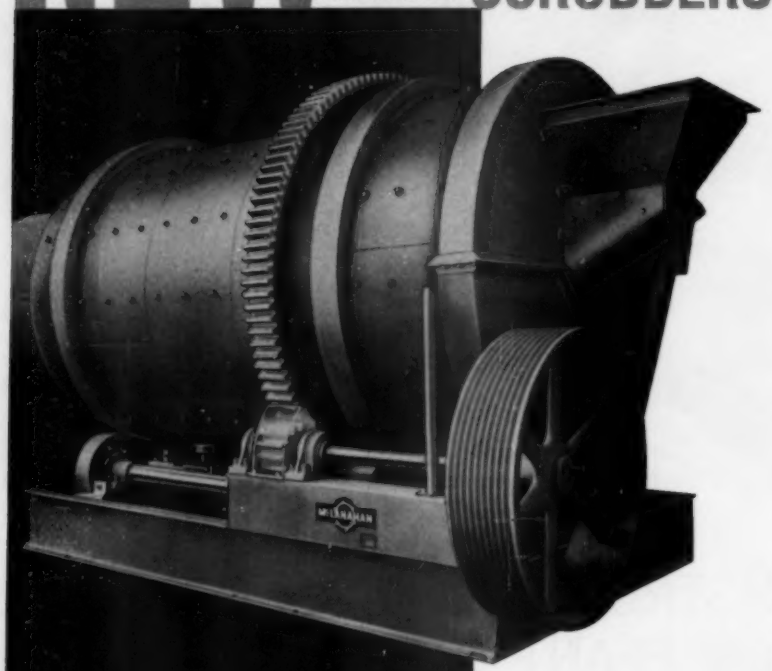
DARIN & ARMSTRONG, INC.

GENERAL CONTRACTORS

Chicago 38, Ill. DETROIT 38, MICH. Cincinnati 18, Ohio

Enter 1225 on Reader Card

NEW HIGH-CAPACITY STANDARDIZED SCRUBBERS



McLANAHAN SINCE 1835

TYPE HD HEAVY DUTY

With capacities from 60 to 250 tph, Scrubbers in this new series are ruggedly constructed and designed for excellent results with a minimum of water, power and maintenance. Specify McLanahan H-D Heavy Duty Scrubbers for efficient removal of dirt, loam, light clays, soft rock and similar materials from sand, gravel, crushed stones and ores.

Ask for New Bulletin HDS-70

- Optional desander for separating fine and coarse materials.
- Renewable tires on drum, trunnions and thrust rollers.
- Cut gears . . . Abrasive-resistant liners . . . Perfect concentricity of drum, tires and gear.

McLanahan and Stone Corporation
HOLLIDAYSBURG, PENNSYLVANIA
Pit, Mine and Quarry Equipment Headquarters Since 1835

Enter 1286 on Reader Card

NEW PATENTS

(Continued from page 152)

Phosphate rock

U. S. 2,926,428 — Apparatus and method for two-stage drying of **phosphate rock** prior to treatment of the rock in an electrostatic separation mechanism. The ore is first partially dried and then further dried in direct heat exchange. High capacity and good heat efficiency are realized. (to H. W. Adam and C. C. Cook; assigned to International Minerals & Chemical Corporation)

U. S. 2,926,992—In the recovery of uranium and phosphate values from **phosphate rock,** the ore is acidulated, adjusted to a pH of 3.5 to 5, clarified of insoluble matter and the liquid mixed with a reducing agent and a filter aid such as **diatomite** or **fuller's earth.** The phosphate-containing solution is filtered off and processed for phosphate values. The recovered solids are acid treated to dissolve the precipitated uranium salts from the filter aid material. (to R. E. Stedman; assigned to Imperial Chemical Industries, Ltd.)

U. S. 2,927,691—In a method for deoiling concentrates obtained in the double froth flotation of **phosphate rock,** the wet rougher concentrate is mixed with a small amount of diesel oil or other water-immiscible organic solvent. The surfaces of the silica particles are left in such a state that they are more readily floated in the succeeding cationic amine flotation step. (to O. C. Chapman and A. W. Dean; assigned to Virginia-Carolina Chemical Corporation)

U. S. 2,927,692—In an improved process for separation of silica from **phosphate rock,** the ore is subjected to flotation at a pH of 6 to 9 in the presence of a reaction product of a polyalkylene polyamine with tall oil or tall oil pitch. The silica is floated, and a phosphate concentrate recovered from the underflow. The silica float fraction can be re-treated for recovery of additional values. (to C. A. Hollingsworth, K. F. Schilling and J. L. Wester; assigned to Smith-Douglass Co.)

Perlite

Canadian 592,650 — Continuous method for producing from crude **perlite** a filter aid material comparable with diatomite, qualitywise. A system of air classifying steps is used to fractionate the freshly expanded perlite. (to W. C. Maxey)

(Continued on page 156)

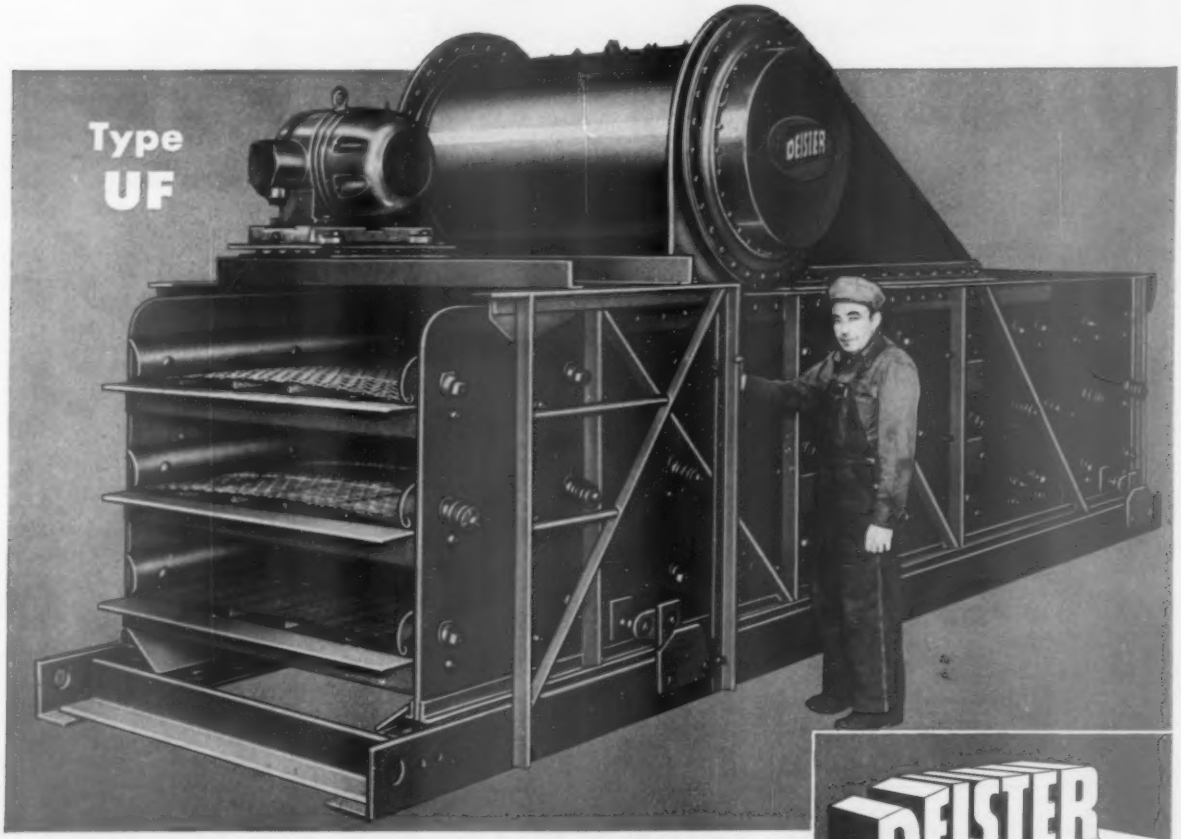
Need MORE capacity?
...headroom limited?

Here's how to increase production of sized material *without increasing headroom:* Replace your smaller inclined vibrating screens with Deister Type UF Horizontal Screens.

These big-capacity screens will fit in existing plants where lack of headroom disqualifies larger inclined screens. Space-saving Deister Horizontal Screens also merit careful consideration in new plant designs . . . permit reduction of overall building height.

Type UF Screens are available in single, double and triple deck models —widths of 3, 4 and 5 feet—lengths up to 18 feet. An important feature of these screens is Deister's exclusive Unitized Life-Time Vibrating Mechanism. All rotating parts run in an oil mist, permitting higher operating speeds at lower temperatures. Inner and outer labyrinth seals keep lubricant in . . . unit requires only one seasonal oil change.

Like all Deister Screens, the Type UF is built for years of hard-working, trouble-free service. The dependability of Deister Screens is a matter of record in plants from coast to coast. Write for engineering recommendations on your screening problems.



DEISTER MACHINE COMPANY
1933 East Wayne St., Fort Wayne, Indiana

Enter 1226 on Reader Card

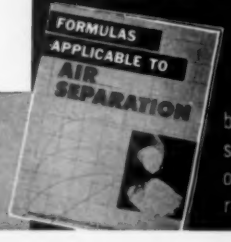
USING SCREEN SEPARATIONS?
NOTHING CLASSIFIES AS
PERFECTLY AS AIR

GAYCO
CENTRIFUGAL
AIR
SEPARATORS

Classify practically all dry fine materials

You get:
- CLOSER SEPARATIONS
- IMPROVED PRODUCTION
- NO UNDESIRABLE OVERSIZE.

RANGE 60 to 400 mesh.
Timken bearings.
Choice of Standard or Heavy-Duty Models.



this helpful booklet sent on request

Robert M. Gay Division
UNIVERSAL ROAD MACHINERY CO.
117 Liberty St., New York 6, N. Y.
Factory and Laboratory: Kingston, N. Y.
In Canada: Watson-Jack Hopkins Ltd., Montreal

Enter 1287 on Reader Card

TRIAL SAMPLES
Of World-Famous WHITMORE'S Lubricants
NOW IN AEROSOL SPRAY-ON CANS!

HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal—no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300%—special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:
- Open Gears, Dipper Sticks, Cams
- Enclosed Gear Cases
- Wire Rope and Cable
- Hydraulic Units, Torque Converters
- Roller, Ball, and Sleeve Bearings
- Speed Reducers

Est. 1893
THE WHITMORE MANUFACTURING CO.
LUBRICATING ENGINEERS
CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

Enter 1288 on Reader Card

NEW PATENTS

(Continued from page 154)

Asbestos

U. S. 2,928,542—In an apparatus for the dry concentration of **asbestos** fiber, **mica** flakes and like minerals from ores thereof, broken or crushed ore is fed past a series of rotating suction elements, the suction being so controlled that the lighter fiber of flakes are retained against the elements while heavy gangue materials drop off into waste bins. In another part of its rotation path the mineral particles are blown from the surfaces of the suction elements. (to M. E. Mencimer)

U. S. 2,929,447—Machine for making uniform and strong pipes consisting of **asbestos** fiber and **portland cement.** (to R. Fourmanoit; assigned to Johns-Manville Corp.)

U. S. 2,929,735—Method for making from a mixture of **asbestos** fiber and **portland cement** shingles having on their surfaces a permanent embossed color design. (to B. H. Field and J. W. Mayo; assigned to The Patent & Licensing Corp.)

Canadian 594,371—In a method for effectively defiberizing **asbestos** fiber bundles without impairing fiber length, a liquid dispersion of the asbestos material is treated with a wetting agent having an electrical polarity opposite to that of the asbestos. After a period of time the bundles become defiberized. Chrysotile carries a positive charge, whereas the blue and amphibole types are negatively charged. (to W. Wilke; assigned to Rex Asbestwerke Graf von Rex K.G.)

Canadian 594,471—In a process for recovering chrysotile **asbestos** fiber from weathered mill tailings, the tailings material is broken up and then subjected to drag classification in an aerated stream of water, whereby the fiber tends to float. To increase recovery, the underflow is passed through a secondary drag classification step. (to M. C. Pharo; assigned to Johnson's Co. Ltd.)

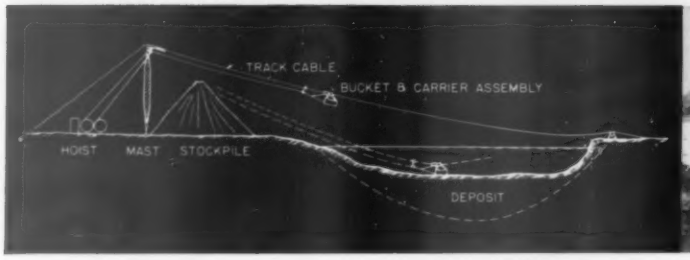
U. S. 2,926,997—Acid leaching process for producing synthetic chrysotile **asbestos** fiber from the antigorite component of **serpentine.** The antigorite fiber is leached with enough hydrochloric acid to remove 5-75 percent of the magnesium hydroxide content, and then filtered and washed. The resulting product is a colloidal fiber up to 1 micron in diameter and 3 microns in length. (to G. L. Kalousek; assigned to Owens-Corning Fiberglas Corp.)

(Continued on page 162)

FROM PIT TO STOCKPILE...

Dig and Haul at Lowest Cost with a Sauerman Slackline

DIGS AND HAULS—New Sauerman Slackliner Bucket is especially designed for tough digging. It inhauls at high speed, dumps automatically, and returns to digging point by gravity.



STOCKPILES MATERIAL—Regardless of long hauls, the Slackline builds a large surge pile to allow charging the plant at any desired rate. Plenty of material is in ready reserve for seasonal or unexpected increases in schedule.

Operating costs as low as 8¢ per yd. for labor, power and maintenance are reported by Slackline Cableway owners when digging free-caving material at average depth and haul distances.

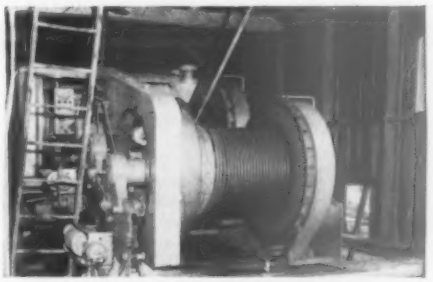
These low costs are achieved by using just one machine—the new Sauerman Slackline Cableway. Multiple equipment is not needed to supply your required tonnage. For example, on an average haul and digging depth, a single medium size machine will charge a 200 tph. plant.

The high Slackline mast permits building a large pile which can supply plant demands through a plate feeder and tunnel conveyor, front-end loader or clamshell. The new Sauerman torque converter diesel-hoist automatically matches power to load demands and is designed for continuous duty. Fluid drive cushions out shock loads to reduce fuel and maintenance costs, extend cable life.

Increasing land values and depleting resources make it necessary to get all the material out of your deposit. You can do this with a Sauerman Slackline. The machine will dig from ground level to deep under water and keep your plant running additional years at the lowest possible operating cost. Several pits are now operating Slacklines on 1000-ft. spans with average hauls of 500 to 700 ft. and from 100-ft. depths.

Write or call, giving your tonnage requirements, depth and length of deposit—if available. We will promptly supply more information on Slackline Cableways, and show you how to *save with a Sauerman.*

CONTROL IS REMOTE, EFFICIENT AND SAFE—Control station can be conveniently located at any strategic point in plant area. Operator can watch entire operation. Fatigue is minimized and personal danger eliminated.



TORQUE CONVERTER INCREASES PRODUCTION, CUTS MAINTENANCE—Now available, the new Sauerman Torque Converter Hoist automatically matches power to load, provides a smooth and steady flow of material, reduces fuel, maintenance and cable costs.

SAUERMAN BROS., INC. 630 SO. 28th AVE. BELLWOOD, ILL.

LInden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

Enter 1248 on Reader Card

This unretouched photograph shows a multiple hole blast detonated with Primacord, and hooked up with Primacord M/S Connectors in the trunk line. Note the steady progress of this blast from the point of initiation at the left as indicated by the red line.

Millisecond Delay Blasting with Primacord and

PRIMACORD M/S CONNECTORS

can provide you with these 8 advantages:

One of the primary purposes of millisecond delay is to provide relief between holes or rows of holes. When properly relieved, each succeeding charge "takes the line of least resistance." This condition usually results in

1. Less explosive required than for comparable instantaneous blasting.
2. Better fragmentation.
3. Less vibration and concussion.
4. Better control of throw or displacement.
5. Reduction of "toe" and undesirable backbreak.

Primacord will initiate all cap-sensitive explosives, but is insensitive to detonation by stray electrical currents, sparks or ordinary shock. When Primacord is used for all in-hole priming and to connect all holes, you have these additional advantages:

6. The work of loading the blast can follow the drillers. The holes can stand loaded and Primacord primed until everything is ready for the blast.
7. Danger of a premature blast is minimized. You detonate the Primacord trunk line with fuse and cap or electric blasting cap attached *only when all is ready for the blast.*
8. Less chance of missed holes with unexploded powder and caps in the muck.

The Primacord M/S Connector is a non-electric delay device. It consists of a metal tube containing a delay element in the center with a series of adjacent charges at each end. A piece of Primacord about 12" long is crimped onto each end of the metal tube. The Primacord M/S Connector is constructed symmetrically about the center and therefore functions in either direction. The Connectors are used by simply cutting the Primacord trunk line at the spot where the delay is desired and tying the Connector to the cut end of the Primacord trunk line with a square knot. Primacord M/S Connectors may be obtained for three different delay periods: 5, 9 and 17 milliseconds. They are packed 50 in a cardboard tube, 500 to a case. Manufactured by E. I. duPont de Nemours & Company. Available through all explosives suppliers.

The ENSIGN-BICKFORD COMPANY

Simsbury, Connecticut • Since 1836

MS-2

Enter 1295 on Reader Card

READER-SERVICE CARD

RP-6-60

ROCK PRODUCTS
79 W. Monroe St.

JUNE, 1960
Chicago 3, Illinois

Cannot be serviced after August 1, 1960 postmark.

Please print or type

Name_____ Position_____

Company (In Full)_____

Company Address_____ City_____ Zone____ State_____

Send information on items identified by key numbers beside or below items of interest to you. List your choice in numerical order. Limit 10 per card.

(1) ..... (2) ..... (3) ..... (4) ..... (5) .....

(6) ..... (7) ..... (8) ..... (9) ..... (10) .....

IF NO KEY NUMBER, USE COMPANY NAME

BUSINESS REPLY CARD
No Postage Stamp Necessary If Mailed in the United States

FIRST CLASS
PERMIT NO. 1417
CHICAGO, ILL.

– POSTAGE WILL BE PAID BY –

ROCK PRODUCTS
79 WEST MONROE ST.
CHICAGO 3, ILL.

MONEY-MAKING IDEAS FOR YOU - - - FREE

HOW TO USE THIS SERVICE

1. **Advertised Products**
2. **New Machinery**
3. **New Literature**

There is a wealth of valuable information in the manufacturers' booklets offered in this issue. For your convenience, each advertisement, each new machinery and new literature item has been given a key number. Simply fill in the proper key number in the appropriate space on the card above and send it to us. We'll do the rest.

BUSINESS REPLY CARD

No Postage Stamp Necessary If Mailed in the United States

FIRST CLASS
PERMIT NO. 1417
CHICAGO, ILL.

– POSTAGE WILL BE PAID BY –

ROCK PRODUCTS

79 WEST MONROE ST.

CHICAGO 3, ILL.

READER-SERVICE CARD

RP-6-60

ROCK PRODUCTS
79 W. Monroe St.

JUNE, 1960
Chicago 3, Illinois

Cannot be serviced after August 1, 1960 postmark.

Please print or type

Name_____ Position_____

Company (In Full)_____

Company Address_____ City_____ Zone____ State_____

Send information on items identified by key numbers beside or below items of interest to you. List your choice in numerical order. Limit 10 per card.

(1) ..... (2) ..... (3) ..... (4) ..... (5) .....

(6) ..... (7) ..... (8) ..... (9) ..... (10) .....

IF NO KEY NUMBER, USE COMPANY NAME

MONEY-MAKING IDEAS FOR YOU - - - FREE

HOW TO USE THIS SERVICE

1. **Advertised Products**
2. **New Machinery**
3. **New Literature**

There is a wealth of valuable information in the manufacturers' booklets offered in this issue. For your convenience, each advertisement, each new machinery and new literature item has been given a key number. Simply fill in the proper key number in the appropriate space on the card above and send it to us. We'll do the rest.

SHEFFIELD

MOLY-COP

COPPER-MOLYBDENUM-ALLOY

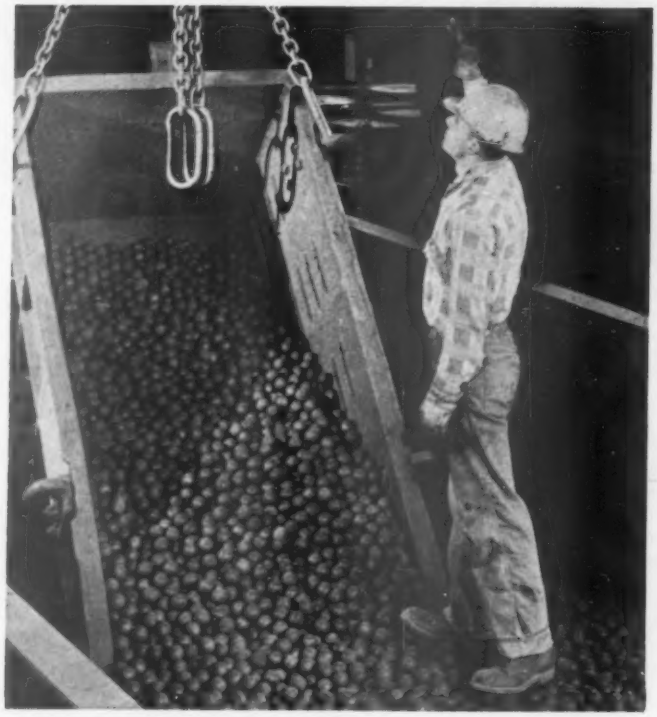
Grinding Balls

consistently

UNIFORM

hardness at the surface

. . . toughness to the core



Moly-Cop Balls will give you better grinding at lower cost. What's behind this fine performance? Hardness, toughness and uniformity. Hardness to fight wear. Toughness to resist spalling and breaking. And uniformity of fine grain structure right to the core. Result: Moly-Cops keep their spherical shape longer. Fewer chargings. Less down time. Money saved.

The Standard of Comparison Around the World

New steels are born at Armco

SHEFFIELD DIVISION

Sheffield Plants in Kansas City, Tulsa and Houston

ARMCO STEEL CORPORATION

OTHER DIVISIONS AND SUBSIDIARIES: Armco Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Enter 1246 on Reader Card

HAYWARD CLAMSHELL BUCKETS

**WORK LONGER,
WORK FASTER,
WEAR LESS!**

Designed with rugged, one-piece alloy shells... wide type, cast manganese steel cutting edges... smooth shell interior for fast, capacity loads and easy discharge... manganese bushings... diagonal truss brace to keep shell in line... has no side sway or back lash... *plus many other cost-cutting design features!*

Get complete details. Write today for illustrated bulletin.

THE HAYWARD COMPANY

50 CHURCH STREET, DEP'T R, NEW YORK 7, N. Y.

Builders of Better Buckets Since 1888

Enter 1284 on Reader Card

LIQUIDATING

1—Allis Chalmers SS rotary dryer, 6' x 50', complete with drive, motor, fans and blowers.

2—Louisville SS rotary dryers, 8' x 50', complete with drives, motors, fans, blowers, etc.

1—Traylor 11' x 155' rotary kiln, 2 tires, welded ⅞" shell, complete with drive and motor

1—Louisville rotary steam tube dryer, 8' x 45'

1—Rotary dryer 7' x 60', 2 tires, ½" shell, complete with drive, motor, blowers and all auxiliary equipment

1—Rotary 6' x 64', 2 tires, ½" shell, complete with drive, motor, blowers and all auxiliary equipment

1—Rotary dryer 6' x 56', 2 tires, ½" shell, complete with drive, motor, blowers and all auxiliary equipment

1—Rotary dryer 6' x 50', 2 tires, ½" shell, complete with drive, motor, blowers and all auxiliary equipment

1—Rotary dryer 6' x 35', 2 tires, ½" shell, complete with drive, motor, blowers and all auxiliary equipment

1—Rotary dryer 4' x 20', 2 tires, ½" shell, complete with drive, motor, blowers and all auxiliary equipment

10—Pacific vertical feed water reciprocating pumps, 10 GPM to 340 GPM, 80' head to 175' head, complete with motors

1—Dorr Type DSFR—2 classifier, 3' x 20'6" x 2½" slope

1—Hardinge pilot size ball mill, 24" x 8", complete

1—Patterson rod mill, 4' x 11'6"

R. GELB & SONS, INC.

U.S. HIGHWAY 22, UNION, N. J., Phone MUrdock 6-4900

Enter 1285 on Reader Card

NEW PATENTS

(Continued from page 156)

Cement

British 816,474—In the making of **portland cement** raw slurry where one or more of the components must be upgraded by froth flotation, the dewatering step is eliminated by grinding the raw material to be upgraded, separating it into a coarse fraction containing mostly desired material and a fine fraction containing the bulk of the impurities, subjecting only the fines fraction to froth flotation, and recombining the wet, purified fines with the dry coarse material, thereby effecting a reduction in water content without using the customary large thickener. (to J. O. Cleeman; assigned to F. L. Smidth & Co.)

British 826,683—Method of and apparatus for preheating **portland cement** raw mixtures in dry powder form with waste gases from the kiln. The material is preheated in two stages in a gas flow countercurrent to the kiln gas flow. (to G. C. Prussing and B. Helming; assigned to Polysius G.m.b.H.)

British 827,232—Design for a granulating dish particularly adapted to the granulating or balling of **portland cement** raw mixtures. Provision is made for spraying and scraping the surface of the material. (to VEB Zementlanlagenbau Dessau)

British 828,886—Design for an improved heat-exchanger plant for treating **portland cement** or **lime** raw materials in nodular form preparatory to feeding the material to a rotary kiln. The heat-exchanger also functions as a dust collector. (R. V. Beal and L. H. Bishop; assigned to Associated Portland Cement Manufacturers Ltd.)

British 828,887—Design for a machine for cutting and handling **portland cement** slurry cake or pug, such as that produced by a movable plate press. (L. H. Bishop; assigned to Associated Portland Cement Manufacturers Ltd.)

British 828,888—Improved method for discharging preheated **portland cement** or **lime** raw materials from the heat-exchanger described in British Patent No. 828,886 (see abstract above), whereby the material is discharged evenly and progressively around the whole circumference of the discharge aperture. (to G. G. J. Davis; assigned to Associated Portland Cement Manufacturers Ltd.)

(Continued on page 164)

Enter 1300 on Reader Card

ONE pump becomes MANY . . . saving you pump dollars . . . giving you a wide range of clear water, non-clog and other liquid-handling modifications . . . when you standardize your pumping operations with Fairbanks, Morse ADAPT-*ABLE* pumps.

F-M ADAPT-*ABLES* consist of a pump frame and simple adapter to which can be attached a wide variety of F-M hydraulic ends with enclosed, semi-open or non-clog impellers. Conversion is easy . . . inexpensive, too.

F-M ADAPT-*ABLES are "NEMA-Matched"*: pump mounting dimensions are standardized with similar dimensions of Nema-driving motors. Gone is the need for make-shift height-adjusting blocks and odd-bore couplings!

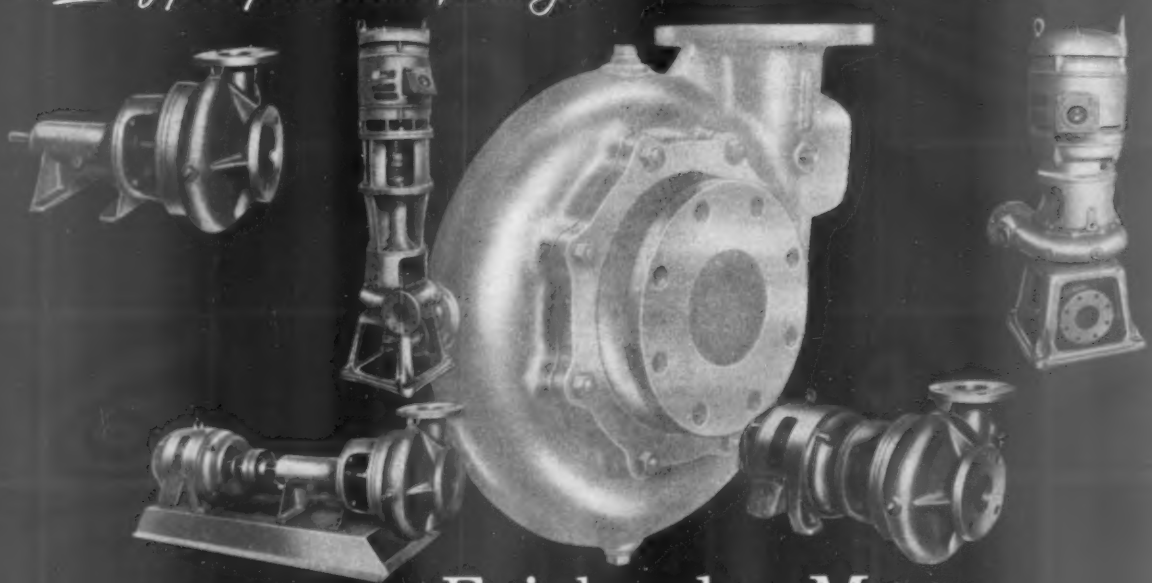
The ADAPT-*ABLE* design means that the most economical frame size may be selected to match the motor horsepower requirements of the pumping job.

And there are other advantages: choice of mechanical seals or conventional stuffing boxes with easy field change-over from one to the other . . . interchangeable bearings for pumps and motors. For special liquid handling problems, hydraulic ends can be specially alloyed to fit the needs: we've been solving such problems for generations.

Regardless of *what* liquids you pump . . . or *where* . . . Fairbanks, Morse builds pumps and *matching* power units for *your* use . . . in a greater range of sizes, types and capacities than *anyone, anywhere*. Start SAVING pump and motor dollars by putting F-M's vast hydraulic experience to work in your plants, process lines and products . . . now!

"nema-matched" *adapt-ables*

. . . a lot of pumps in ONE package!



Fairbanks, Morse

THE PROUDEST NAME IN PUMPS

Pump and Hydraulic Division • Kansas City, Kansas

A MAJOR INDUSTRIAL COMPONENT OF **FAIRBANKS WHITNEY CORPORATION**

NEW PATENTS

(Continued from page 162)

Potash

2,895,794—Process for recovering potassium and magnesium values from the K_2SO_4 reject liquor obtained during processing of **langbeinite.** (to W. B. Dancy and W. N. Stanley, Jr.; assigned to International Minerals & Chemical Corp.)

2,899,055—Electrostatic process for beneficiating **phosphate rock, sylvinite,** or other like ores. Weakly charged particles of ore are suspended in an electrostatic field rather than falling freely. (to I. M. Le Baron; assigned to International Minerals & Chemical Corporation)

2,899,071—Apparatus for expediting the decantation dewatering of granular solids, such as **sand, sylvinite** pulp, etc. (to C. Bounin)

Talc

U. S. 2,924,515—To prevent scale formation in equipment used in the fluid energy grinding of **talc, feldspar,** etc., small percentages of sodium hydroxide and sodium carbonate are added to the vaporizable slurries. Pressure build-up in the coil is prevented. (to R. W. Chapman and R. M. Dille; assigned to Texaco Inc.)

U. S. 2,924,578—To prevent scale formation in equipment used in the fluid energy grinding of **talc, feldspar,** etc., small percentages of ammonia and carbon dioxide are added to the vaporizable slurries. (to F. E. Guptill, Jr.; assigned to Texaco Inc.)

Mica

U. S. 2,929,501—Design for a cyclone separator particularly adapted for the concentration of **mica** from mixtures of mica with feldspar or sand and organic matter. Detailed examples are given for recovery of mica from river silt deposits. (to D. H. Fenske and R. T. Sorenson; assigned to International Minerals & Chemical Corp.)

U. S. 2,932,458—Design for a closed circuit jet impact grinder and power classifier particularly suitable for processing **graphite, mica, talc** and like material. (to G. M. Croft, A. J. Fisher and W. Billos; assigned to Majac, Inc.)

U. S. 2,932,564 and 2,932,567—Use of natural or synthetic **mica** as an additive in molten cast iron or other metals to effect the hardening and forming properties thereof and to impart certain desirable characteristics to the resulting hard metal. (to N. R. Evans)

U. S. 2,909,331—Design for an improved mill for separating **mica** from gangue and delaminating the concentrated material utilizing jet circulating means. The mill also may be adapted to the concentration and defiberization of **asbestos.** (to G. M. Croft; assigned to Majac, Inc.)

Canadian 583,809—Process for concentration of **mica** from river silt deposits containing sizable percentages of that mineral. This patent is substantially the same as U. S. Patent No. 2,885,078, dated May 5, 1959. (to D. H. Fenske; assigned to International Minerals & Chemical Corp.)

U. S. 2,915,477—In the making of mica pulp, the calcined or weathered **mica** particles are immersed in aqueous hydrogen peroxide. Dissociation of this compound develops a gas which accelerates the delamination. Finally, the pulp is subjected to mechanical attrition. (to H. W. Potter; assigned to Siemens-Schuckertwerke A.G.)

(Continued on page 165)

HOW TO INCREASE YOUR PROFITS

CASH IN ON THE FAST-GROWING STABILIZED BASE MATERIAL BUSINESS ...with the NEW

MADSEN HIGHWAY AIRPORT BASE STABILIZER PLANT

This outstanding MADSEN Base Stabilizer Plant can provide you with a new source of profits in the fast-growing stabilized base material market!

Here is a plant that gives you real money-making output—600 T.P.H. plus...and the greatest "set-up" flexibility and easiest operation and maintenance in the industry. You can set up this plant to suit your particular needs. The basic design provides a drive-through-way in either of two directions with a choice of location (either side or the end) for cement silo and feed conveyor.

MADSEN gives you a degree of mechanical and design simplicity not found in other stabilizer plants, which means faster and easier operation and maintenance, and added profitable tonnage.

Advantages and features of the MADSEN Model 567 Highway-Airport Base Stabilizer Plant:

CONSTANT HIGH PRODUCTION...rated at 600 T.P.H. this plant has consistently produced greater tonnage.

UNIT CONSTRUCTION...for easier tranporting and handling.

FAST ERECTING, DISMANTLING and TRANSPORTING.

GREATER ACCURACY...in proportioning and control of materials with exclusive MADSEN cement BIN-DICATOR shut-off control.

EASIER and SIMPLER OPERATION and MAINTENANCE.

TWIN-SHAFT, CONTINUOUS-TYPE MIXER...for faster, more thorough mixing.

GREATER EFFICIENCY—LESS MAINTENANCE...working parts are located at discharge end of mixer, away from sifting fines of conveyor belt.

Ask your MADSEN Distributor for Bulletin SP-59 or write direct

Complete parts stock in Los Angeles and Lima, Ohio

1910 - 1960 50 YEARS—SERVING INDUSTRY

MADSEN WORKS / Construction Equipment Division BALDWIN-LIMA-HAMILTON CORPORATION

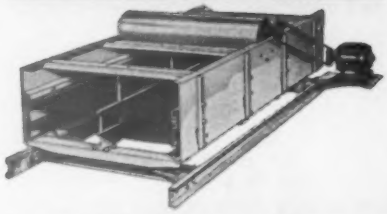
14120 E. ROSECRANS AVE., P.O. BOX 38, LA MIRADA, CALIFORNIA

BALDWIN-LIMA-HAMILTON CORPORATION, LIMA, OHIO

Enter 1283 on Reader Card

FOR PROFITABLE SCREENING USE

UNIVERSALS



- FAST, SIMPLE, RUGGED
- DEPENDABLE
- ECONOMICAL
- STOCK DELIVERIES
- FAST SERVICE

Write today for free catalog No. 150 on screens and screening

UNIVERSAL VIBRATING SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

Enter 1281 on Reader Card

FOR DEPENDABILITY PLUS ECONOMY
REPLACE WITH

INDIAN BRAND

Get the most out of your present equipment. When you need replacements, remember we started in 1913 to build our reputation in the Manganese Steel field for dependability plus economy.

Insist on INDIAN BRAND MANGANESE STEEL

Shovel Dippers • Dipper Teeth
Shovel Treads
Crusher Jaw Plates
Mantles • Concaves
Bowl Liners • Roll Shells
Pulverizer Hammers
Grate Bars • Breaker Plates
Ball Mill Liners • Screen Plates
Misc. Manganese Steel Castings

THE FROG, SWITCH AND MANUFACTURING COMPANY
Carlisle, Pennsylvania • Established 1881

Enter 1280 on Reader Card

NEW PATENTS

(Continued from page 164)

Lime

British 828,452—In the slaking of **lime,** the proportions of unslaked lime and water are controlled by a device sensitive to the consistency of the mixture, so that slaked lime issues at a predetermined consistency. (assigned to Wallace & Tiernan Inc.)

Spodumene

U. S. 2,931,703—Method for the recovery of lithium hydroxide from natural or byproduct mixtures of lithium and phosphate ions, such as dilithium sodium phosphate obtained as a byproduct of **Searles Lakes brines,** trilithium phosphate produced by phosphoric acid processing of caustic solutions derived from **spodumene, lepidolite** or **petalite** and like materials. The source material is calcined along with lime and alumina, and then digested in water in the presence of lime. (to L. J. Reader; assigned to Foote Mineral Co.)

Wollastonite

British 827,813—Use of **steatite, wollastonite, bentonite, talc** and like ceramic materials in the making of a friction material for brakes and clutches. (assigned to Steatit-Magnesia A.G.)

Clay, expanded

U. S. 2,922,490—Improved apparatus and method for purifying stack gases from kilns used to produce **expanded clay** aggregate or like products. The gases are subjected to high pressure steam in a chamber containing a series of baffles. (to A. F. Old and H. E. Seifert; assigned to Southern Lightweight Aggregate Corp.)

Diatomite

U. S. 2,913,237—Apparatus for cooling calcined alumina, magnesia, **diatomite** or other hot materials of great fineness. (to L. Petersen; assigned to F. L. Smidth & Co.)

Canadian 584,502 and 585,628—A composition for stabilizing soils to form improved bases for roads comprises **lime,** soil, water and a pozzolanic material such as fly ash, calcined **diatomite,** or crude or calcined **pumicite.** (to J. E. Havelin and F. Kahn; assigned to G. & W. H. Corson, Inc.)

END

"THIS LUBRICANT PRACTICALLY ELIMINATED BEARING REPLACEMENTS"
Says- C. O. SPARKS, INC.
& Mundo Engineering Co. of Los Angeles, Calif.

"Prior to using LUBRIPLATE, we were replacing shaker screen bearings within 60 to 120 days due to lack of or faulty lubrication. Since we started using LUBRIPLATE seven years ago, we have only replaced two shaker screen bearings and these because of natural wear. We now use LUBRIPLATE for general lubrication throughout our plant."

W. T. Ellington, President
Mundo Engineering Co.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

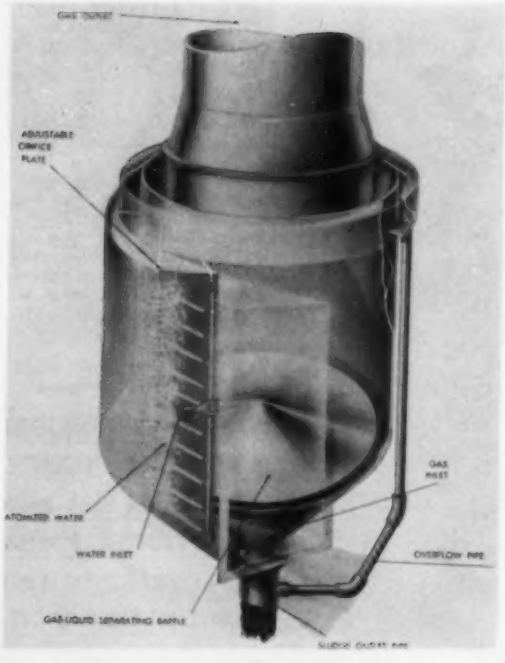
LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

Enter 1282 on Reader Card

NEW MACHINERY

FOR FREE INFORMATION on these items, simply fill out and mail postage-paid Reader Service Card found elsewhere in this issue



Wet collector for fine dust

This new dust collector, the Orliclone, is one of the very few wet collectors that can match the performance of the bag-type filter or the electrostatic collector for handling fine dusts down to submicron sizes. The erected cost of the new units is said to be about 50 percent of these other type collectors. At the same time, less than half as much space is needed and higher operating efficiency with lower horsepower is promised. An adjustment inlet orifice lets the unit maintain better than 99 percent collection efficiency over a wide range of inlet gas flow rates.

Single units of the Orliclone can handle up to 40,000 cfm. Larger capacities are handled with multiple units. The relatively small size of each unit is achieved by the use of high velocity, atomized water sprays in the inlet opening. The water picks up dust and fume from the air and the mixture flows downward through the unit to an outlet pipe. This sludge and fume suspension in water is often easier to pump, process and dispose of than the same materials in dry form. Clean air is exhausted through a scroll outlet at the top.

The new unit is a high-energy, high-velocity collector. It normally operates best in the range of 10 to 30 in. static pressure range, but the pressure drop is said to be lower than other high energy scrubbers. (The Ducon Co., Inc., Mineola, N.Y.)

Enter 200 on Reader Card

Tractor loader

A new front-end wheeled loader offers increased capacity and operating speed. The new TL-12 unit has a carry capacity of 4,000 lb. and a static lifting capacity of about 9,500 lb.

Four-wheel drives give speeds up to 21 mph. and reverse speeds to 28 mph., permitting faster loading cycles. A single-stage torque converter assures correct operating speeds for every loading condition. The new unit is equipped with either a 77-hp. gasoline engine or a 76.5-hp. diesel engine.

Four buckets are available ranging between 1 and 2 cu. yd. capacity with the selection depending on the bulk density and digging conditions of the material to be handled. Dumping clearance under the cutting edge is about 8¼ ft. A line of other attachments and accessories is available, including all-weather cab, heater and defroster, backhoe, lift fork, crane hook and backfill blade. (Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.)

Enter 201 on Reader Card

Hardfacing electrode

An extruded, heavily coated arc welding electrode offers the rock products producer excellent wear resistance under medium impact conditions. The stable coating includes iron powder which increases the rate of deposition. Approximate hardness of the finished deposit is about 375 Brinnell. The weld is not machinable but can be forged at bright cherry red. Known as Tufanhard, the new electrode is available in 50-lb. boxes. (Hobart Bros. Co., Troy, Ohio)

Enter 202 on Reader Card

Please turn to page 168

Enter 1217 on Reader Card

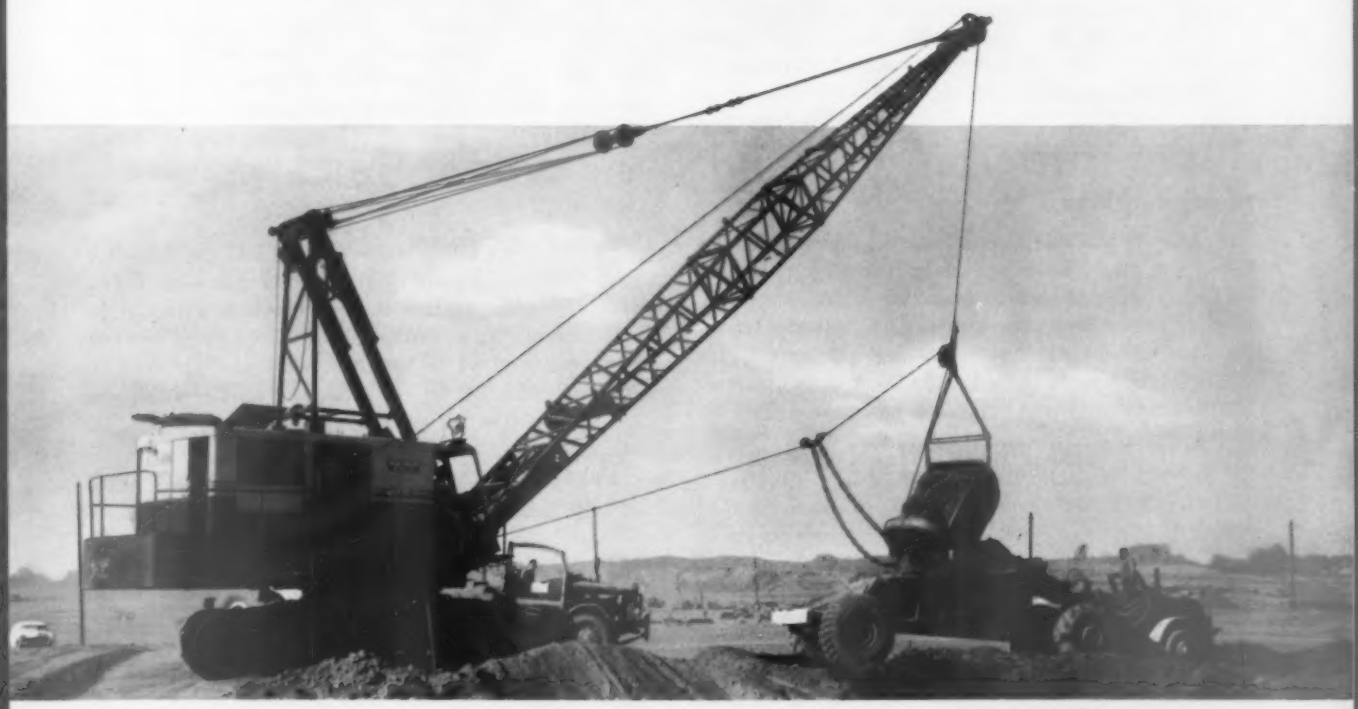
3½

4

5 YARD?

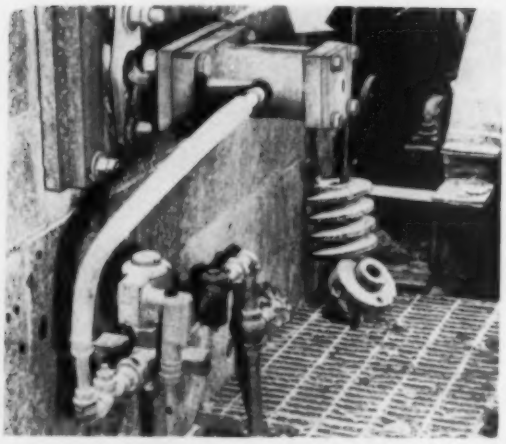
If you're ready to move up for bigger profits, check the new 71-B Series Two. Based on your application, this machine makes these capacities available as a shovel-dragline-hoe. The 71-B dragline shown is equipped with 70′ boom and 5-yard Bucyrus-Erie BM bucket. Get the facts: Bucyrus-Erie Co., South Milwaukee, Wisconsin.

38E60



BUCYRUS-ERIE

continued from page 166



Air rappers

An air rapper made with a patented, one-piece design is said to eliminate 80 percent of maintenance problems on electrostatic precipitators and dust collectors. There are no assembly bolts to stretch or shear or separate striking plate to leak air. Housing wear is eliminated with exhaust ports on both sides of the housing to keep the vibrator piston centered.

The new rappers are made for either horizontal or vertical mounting. Each unit weighs 52 lb. and requires about 9 cfm. of air at 50 psi. When used with a solenoid and time-delay relay, automatic operation can be set up. (National Air Vibrator Co., 435 Literary Rd., Cleveland 13, Ohio)

Enter 203 on Reader Card

Heavy-duty lube

A new heavy-duty automotive lubricant is offered for the severe operating conditions in the rock products industry. Superior service records have been achieved for Darina AX in tests to lubricate wheel bearings, shackles, kingpins and other chassis parts in test units. Wet stability, mechanical stability and corrosion resistance are said to be exceptional, especially under winter operating conditions. (Shell Oil Co., 50 West 50th St., New York 20, N.Y.)

Enter 204 on Reader Card

Torque converter

A new line of sumpless torque converters has been developed especially for use on motor graders, tractor loaders and other big equipment with powershift transmissions.

These are single-stage units available in three series rated for light, standard and heavy-duty service. The plumbing on all units must be integrated into the transmission systems or into an independently-mounted sump supplied by the maker of the torque converter. All series have a circulating pump to send oil through a cooler. (Twin Disc Clutch Co., Hydraulic Div., Rockford, Illinois)

Enter 205 on Reader Card

Front end loader

Newest addition to this manufacturer's line of 100-hp. tractor units is the Model 123 loader. The new unit is equipped with either 2 or 2¼ cu. yd. buckets and can handle 20,000 lb. at carry position.

Loader arms, main frame, final drive and center housing are fabricated of cast steel with no bolts or welds. Power is provided to give four speeds forward or reverse from 0 to 6½ mph. through the single-stage torque converter. (The Eimco Corp., 634 S. 4th West, Salt Lake City, Utah)

Enter 206 on Reader Card

Simple dust collector

A newly-developed dust collector has only three moving parts yet has several features unusual in bag filters. The porosity of the felted filter sleeves is maintained while back pressure and air volume remain constant. In addition, the unit is equipped with a reverse air pressure blower and air-tight, quick-opening inspection doors.

Capacity of the new "RJ" collector ranges from 285 to 6,400 cfm. Larger capacities are handled with groupings of multiple units. Efficiencies of better than 99 percent are claimed with air to cloth ratios of 20 to 1. The new units will operate effectively regardless of dust particle size or air stream loading at temperatures up to 300 deg. F. (The Day Co., 810 Third Ave., N.E., Minneapolis 13, Minnesota)

Enter 207 on Reader Card

Please turn to page 170

NEW DU PONT "TOVEX"-GEL

Now Du Pont packs 5 blasting advantages into one low-priced explosive

Now you can get the blasting energy you need where rock is really hard to break—at a lower cost than ever.

New "Tovex"-Gel does not contain nitroglycerine. It is the only non-cap-sensitive, cartridged product that gives you maximum borehole density. It has successfully replaced even high strength gelatin dynamites on a pound for pound basis in many places.

You get five blasting advantages with this one new explosive on the job:

1. Better results—equal or superior to higher priced gelatin dynamites.

2. More safety. "Tovex"-Gel is safer than nitroglycerine dynamites.

3. No headaches. No nitroglycerine to cause them!

4. High bore-hole density. Gives more pounds per foot than most products on the market. Fills the entire cross-section of the hole with high density, hard-hitting explosive.

5. Reduced costs. "Tovex"-Gel is priced to give you maximum economy in your operations.

Your Du Pont Explosives representative or distributor will be happy to demonstrate "Tovex"-Gel for you. For details, call him or write: Du Pont, Explosives Department, 6440 Nemours Building, Wilmington 98, Delaware.

DU PONT "TOVEX"-GEL

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING ... *THROUGH CHEMISTRY*

Enter 1240 on Reader Card

continued from page 168

TV monitor

A new self-contained, transistorized television camera has been designed to operate at top efficiency under extreme conditions of dust, vibration and noise. The new camera will operate at an ambient temperature up to 122 deg. F. without special cooling. But housings are available to provide cooling, vaporproofing and weather protection.

The TE-9-A camera is a cylindrical unit about 5½ in. diam., 12 in. long and weighs 9 lb. It achieves high picture quality and will work efficiently at low light levels, down to 1 ft.-candle. The use of transistors makes ventilation unnecessary and makes it possible to operate the unit with only 18 w. of power. (General Electric Co., Mountain View Rd., Lynchburg, Va.)

Enter 208 on Reader Card

Slide rule

A simple, accurate circular slide rule is offered free to engineers, plant and office executives who request it on their business letterhead. The instrument is pocket size and comes with instructions to perform simple multiplication, division and proportion operations. (General Industrial Co., 1788 W. Montrose Ave., Chicago 13, Ill.)

Enter 209 on Reader Card

Drill rig

A one-man drilling outfit offers a new concept in blast hole drilling. Controls are placed to let the operator ride the crawler-mounted rig when it moves from hole to hole and to make the first 20 ft. of hole without leaving his seat. Compressor, 60 ft. of drill steel and accessory equipment are all mounted on a self-propelled tractor.

Because the new C42 Rotadrill is hydraulically operated, all air from the compressor is used to make hole. Hydraulic pressure of 1,500 psi. is applied to the ram in the mast to create a downward pressure of nearly 13,000 lb. Drill rotation is controlled through the variable speed hydraulic motor at the head. (Schramm, Inc., 900 E. Virginia Ave., West Chester, Pa.)

Enter 210 on Reader Card

Self-priming pumps

A new line of self-priming industrial water pumps is offered in both high head and high capacity for sizes from 1½ through 10 in. The new FC units are available for direct drive while type B is available for overhung drives. Shafts are mounted in tapered roller bearings and have sleeve-mounted shaft seals which adjust for wear automatically. (Rice Pump & Machine Co., Belgium, Wis.)

Enter 211 on Reader Card

Liquid flux

A new flux has been developed to greatly improve brazing of cast iron to steel, welding of cast iron and the application of chrome-cobalt-tungsten alloy to carbon steel. Cast iron Liquiflux is a boron infused liquid that is vaporized and inducted into the welding gas stream automatically. It then passes through the welding torch into the flame, a well-balanced flux.

Less heat is needed to apply the new flux; the material is a solvent for iron oxides and, at the same time, it does not oxidize the weld metal. One gallon of Liquiflux will treat about 2,500 cu. ft. of gas. (Rexarc, Inc., West Alexandria, Ohio)

Enter 212 on Reader Card

Ridge-top conveyor belt

A new conveyor belt can handle wet or fine, fluid materials with less slip-back on inclines at a steeper incline than before. The Cleat Top Belt is moulded with diagonal ridges on the carrying surface. When these ridges point in the direction of belt travel, water is retained on the belt; when trailing the direction of travel, water tends to drain off the edges of the belt.

The new conveyor belt is available in standard widths ranging from 12 to 30 in., while standard covers are 3/16-in. top and 1/16-in. bottom. Other widths and cover thicknesses will be produced later. (Hewitt-Robins, Inc., 666 Glenbrook Rd., Stamford, Conn.)

Enter 213 on Reader Card

Please turn to page 172

MAINTENANCE COSTS REDUCED OVER 65%

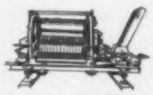
Wm. Moors Concrete Products, Inc., one of the larger producers of cinder and haydite blocks in the Detroit, Michigan area, cut grinder maintenance costs over 65% with the installation of this AMERICAN #9 GRINDER. The unit grinds cinders for over one and one half million cinder blocks a year.

Hubert Moors, president, stated, "The AMERICAN #9 GRINDER is a rugged machine designed to give more production with a minimum of repair. Simplicity and ease of installation make it ideal for block plants."

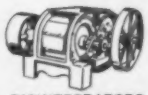
In addition to low maintenance the grinder features wet or dry grinding, no screen plates required, suspended mullers are adjustable to volume and size requirements, gears are long-wearing cast material, 25 horsepower required, volume up to 30 yards per hour.

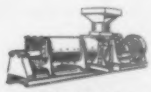
Before you buy—check the AMERICAN way.

American
CLAY MACHINERY
A DIVISION OF
HUBER-WARCO COMPANY • Marion, Ohio, U.S.A.

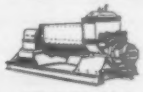

ELECTRIC CUTTERS

SMOOTH ROLL CRUSHERS

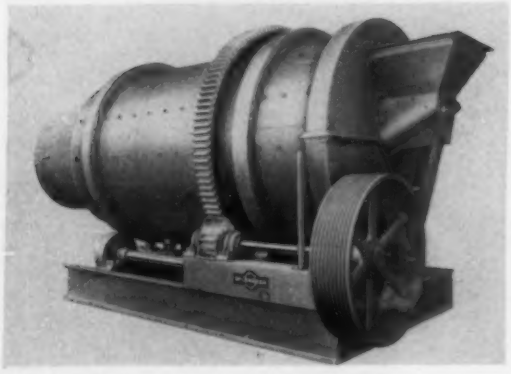

DISINTEGRATORS


PUG MILLS

GRINDERS


COMBINATION DE-AIRING MACHINES

Enter 1306 on Reader Card



Drum scrubber

A new line of heavy-duty scrubbers makes it possible for the rock products producer to process fine and coarse materials at the same time. The H-D scrubbers can handle product sizes up to 8 in. at rates up to 250 tph. to break down soft material and remove dirt and clay.

The new units are made in three standard sizes: 6 x 12 ft., for a capacity range between 60 and 120 tph.; 7 x 14 ft., for 90 to 180 tph.; and 8 x 14 ft., for 125 to 250 tph. Special sizes and optional features are available.

Standard equipment includes forged steel tires, trunnion and thrust rollers with removable and renewable tires and dewatering screen extension. A choice of lifter shelves, plows and angle flights are available in addition to a desander. (McLanahan and Stone Corp., Holidaysburg, Pa.)

Enter 214 on Reader Card

Belt repair cuffs

The vulnerable edges of conveyor belts can now be effectively repaired on the spot by any careful workman and without heavy equipment. This is achieved with new preformed edge cuffs that can be cold vulcanized in place.

With the new repair cuffs edge damage can be mended almost as soon as it appears. This prevents accelerated wear on the edges of the belt which eventually may result in fraying and moisture penetration of the carcass of the belt. (Rema-Tech, Inc., 2 Park Ave., New York 16, N.Y.)

Enter 215 on Reader Card

Lube spray system

A newly developed air-operated spray system makes it possible to spray lubricants from a very coarse to a fine, light spray. A round spray pattern is produced and it is possible to mount the nozzles in several locations. Each valve can be adjusted for its particular conditions and can be altered or shut off without disturbing others in the system.

Only accessory for operation of the system is compressed air between 60 and 125 psi. to atomize any liquid lubricant that flows up to a viscosity of 1,000 sec. S.U. at 100 deg. F. Automatic operation is possible with the addition of a solenoid to the circuit to be controlled. (Oil-Rite Corp., 2318 Waldo Blvd., Manitowoc, Wis.)

Enter 216 on Reader Card

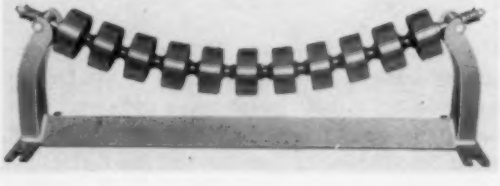
Bronze-bushed pillow block

For the first time a pillow block is available with liners that can be replaced without removing the block from its mounting. Only the cap of the bearing is taken off and the shaft lifted enough to let a mechanic tap out the worn bronze liner and insert a replacement. Rotation of the new liner is prevented with a small brass retainer spool.

The maker offers this feature in a complete line of two-bolt, split journal bearings from 1 15/16 to 2 15/16-in. diam.; for rigid pillow blocks for 3 7/16 to 8-in. diam. shafts and for angle pillow blocks. The housings are semi-steel castings with ductile iron available to order. (Dodge Mfg. Corp., Mishawaka, Ind.)

Enter 217 on Reader Card

Catenary conveyor idler



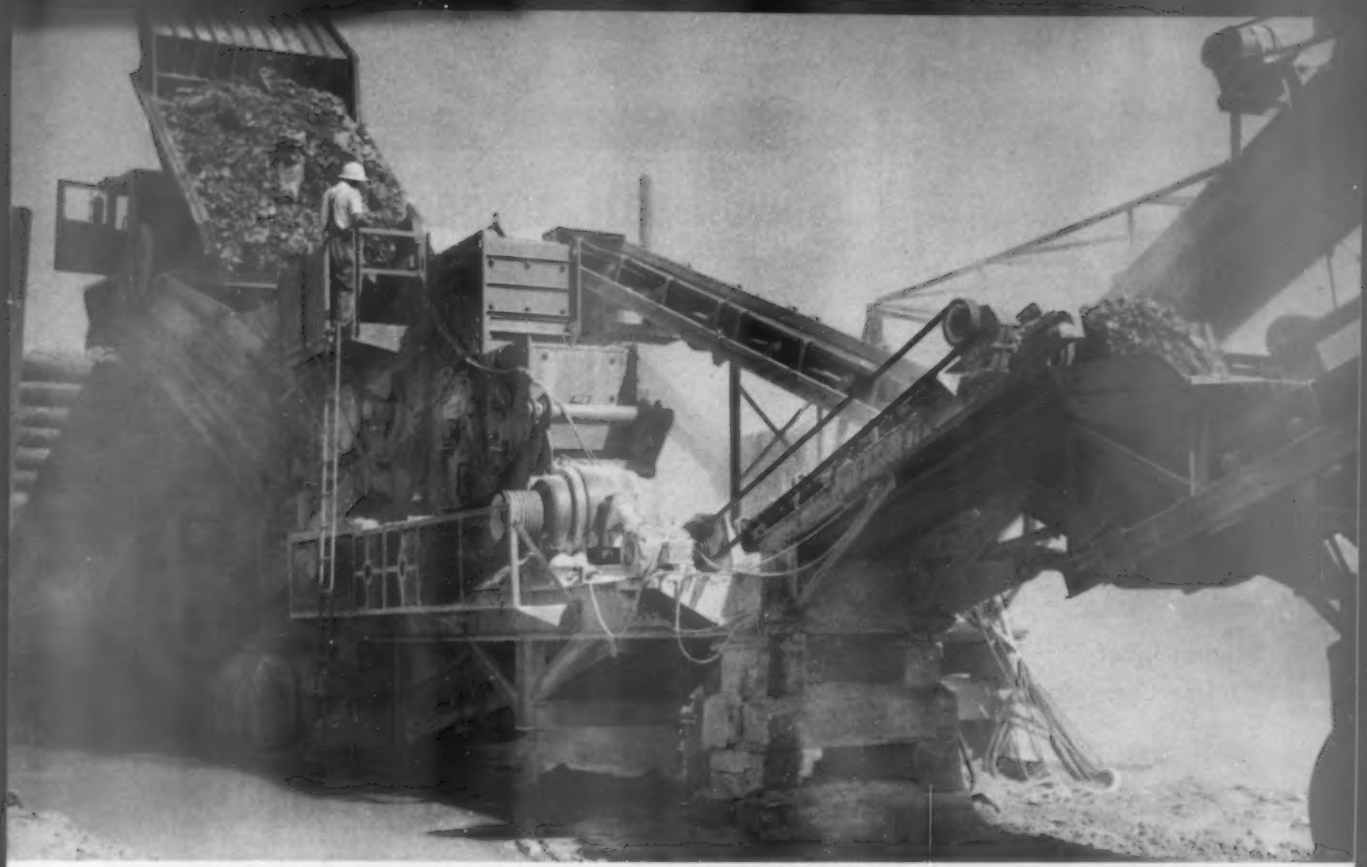
True catenary suspension for conveyor belts is assured by the maker of a new idler. Known as Flexiroll, the multiroll idlers are mounted on a pre-formed, high tensile spring steel shaft. This shaft is said to give greater strength than the wire rope cables of conventional catenary idlers.

Other features of the new idler include compression springs at each end of the catenary shaft to cushion the shock of high speed conveying of coarse materials and a jig-welded self-cleaning, steel frame to support the roller assembly. The new idler is available for the most popular conveyor belt sizes—18, 20, 24, 30 and 36-in. belts. (Stephens-Adamson Mfg. Co., Aurora, Ill.)

Enter 218 on Reader Card

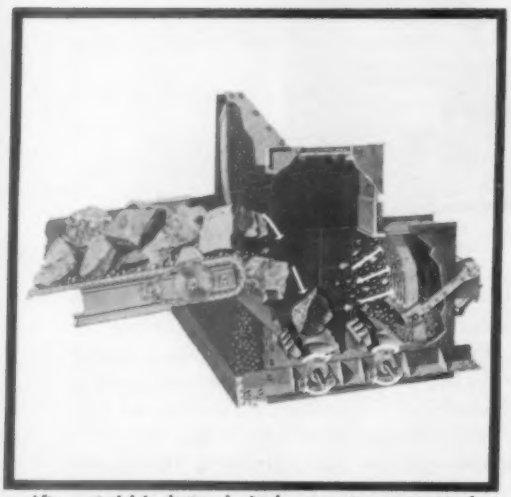
Please turn to page 174

Enter 1299 on Reader Card



The portable Universal 3645 Impact Master boosted capacity by 100 T.P.H. . . reduced personnel at the McMinnville Rock Co., Inc. operation, McMinnville, Tennessee.

Universal's Impact Master with exclusive Straightline Flow gives you MORE TONS AT LESS COST



After material is shattered, sized aggregate moves out of the breaking chamber fast . . . no congestion, rebounding or bridging, more efficient use of power.

Greater Capacity

Straightline flow makes bonus production possible. And only the Impact Master has it. Fast feeding and discharge is the result of two rotors turning in the same direction. Incoming rock gets the full impact of a square blow and is instantly shattered and thrown towards the upper screen grate. Finished material is immediately removed from the breaking chamber; unnecessary rebounding and congestion is eliminated. Oversize falls into path of second hammer circle and is quickly reduced to size and discharged.

Straightline flow gives full production, requires less horsepower and provides the lowest cost per ton.

Savings in Labor, Power, Maintenance and First Cost

In one fast operation shovel loaded run-of-the-quarry rock is reduced to finished material.

High ratio of reduction reduces need of secondary crushers and auxiliary equipment — many successful single crusher closed circuit plants are built around the Impact Master reducing crushing costs to a minimum.

Cubical Product

Impact blow shatters rock across natural cleavage lines which eliminates slabs, slivers or basic weakness in raw material. The result is the highly cubical product required by today's rigid specifications.

Specifications Easily Met

Rotor hammer speed, stripper bar and grate positions are easily adjusted for complete control of a more uniform gradation.

Find out what the Impact Master with exclusive Straightline flow can do for you. Contact your Universal distributor.

PETTIBONE UNIVERSAL
In Cedar Rapids Since 1906

UNIVERSAL ENGINEERING CORPORATION

617 C Avenue N.W., Cedar Rapids, Iowa

A subsidiary of Pettibone-Mulliken Corporation, 4700 W. Division St., Chicago 51, Illinois

continued from page 172

Bearing puller

Idler rolls are often discarded needlessly because it's a tough job to extract frozen or broken bearings. This manufacturer now offers a bearing puller to make a quick, easy replacement of the bearings in conveyor idlers of his design.

The new tool is simply an expansion-head bolt which is slipped into the inner race of the bearing. A traveling nut on the shank of the tool expands the bolt head as it exerts pressure to withdraw the bearing into a recess in the tool itself. There is no warping or tool damage to the end bell of the idler roll, and a replacement bearing can be readily pressed into place. (Universal Engineering Corp., 625 C Ave. N.W., Cedar Rapids, Iowa)

Enter 219 on Reader Card

Motor wagon

A new 12-ton capacity all-hydraulic unit has been added to this manufacturer's line of heavy duty haulage equipment. The TR-160 rear dump motor wagon has a 155 hp. diesel engine to give speeds of 3 to 25 mph.

The body has a loading area of about 11 x 7 ft. to provide a big target area for shovel or dragline loading. Bowl design gives low center of gravity and great road stability. A pair of double-acting hydraulic jacks provides power to raise the body 52 deg. for fast, clean dumping. (Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.)

Enter 220 on Reader Card

Portable compressor

This new 600 cfm. rotary compressor unit can be mounted on practically any tractor to convert it into a highly mobile compressed air source. The compact RT-600 compressor with its side-by-side rotor design lets it mount easily on a tractor. It is driven through a rear power takeoff. The manufacturer claims that it offers simplicity of operation, dependability and low maintenance compared to reciprocating compressors. The unit is offered as a complete package ready to mount. (Joy Mfg. Co., Oliver Bldg., Pittsburgh 22, Pa.)

Enter 221 on Reader Card

Grader controls

All-transistor controls are now available on this grader maker's equipment. They will be a big assist to rock products producers who want to do a more careful job of maintaining their haulage roads. The new Dial-A-Slope controls electronically maintains the blade at the slope the operator has selected.

The productivity of a motor grader is increased up to 50 percent depending on the application, according to the maker. In addition, the operator's job is simplified and frees him from the need to make constant adjustments. As a result, the operator can concentrate on steering and regulating the depth of cut. (LeTourneau-Westinghouse Co., 2301 N.E. Adams St., Peoria, Ill.)

Enter 222 on Reader Card

Diesel tractor rigs

A completely new line of conventional diesel tractor rigs has been designated as "E" Series by its maker. The line includes 10 models ranging from 31,000 to 60,000 gvw. with single and tandem axles. All models use 6-cylinder, valve-in-head diesel engines with ratings from 180 to 262 hp.

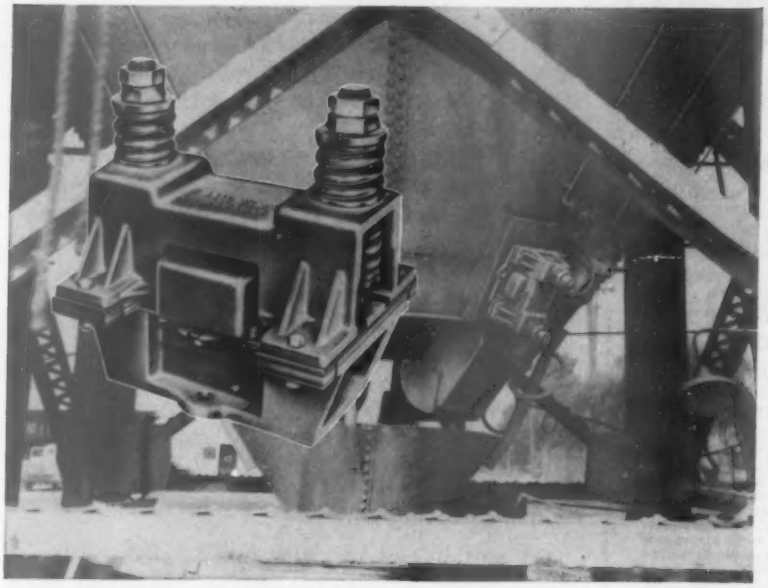
The new line can be customized to the users' requirements with a wide range of selection for main and auxiliary transmissions, a choice of two front-axle spacings, several rear axles and other optional features. (Reo Div., The White Motor Co., Lansing, Mich.)

Enter 223 on Reader Card

Please turn to page 176

SYNTRON cost-cutting equipment of proven dependable Quality

keep bins and hoppers free-flowing



SYNTRON

Pulsating Magnet

BIN VIBRATORS

. . . prevent arching and plugging of sand, aggregate, gravel and heavy stone in bins, hoppers and chutes—keep these materials flowing freely to process equipment.

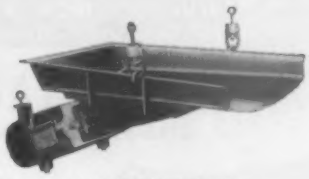
Simplicity of design assures dependability of operation and low maintenance. They are electromagnetic units that produce 3600 powerful, instantly controllable vibrations per minute. Enough vibration to move the most stubborn material.

SYNTRON Bin Vibrators provide the most efficient and effective method of keeping bulk materials free flowing. Eliminate equipment damage by hazardous pounding and rodding.

SYNTRON Bin Vibrators are available in a wide range of sizes. They are easy to install, easy to operate and easy to maintain. Eliminate production slow-downs caused by sticking and clogged bins.

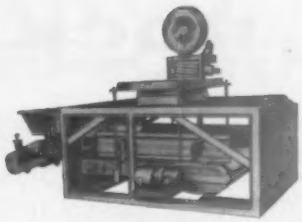
. . . write for complete informative literature today

Other SYNTRON Equipment of proven dependable Quality



VIBRATORY FEEDERS

VIBRATING SCREENS



GRAVIMETRIC FEEDERS

VIBRATORY PACKERS

TEST SIEVE SHAKERS

SYNTRON COMPANY

450 Lexington Ave. Quality Equipment Since 1921 Homer City, Penna.

Sales Offices in principal cities in the United States and Canada—Agents in most foreign countries

Enter 1239 on Reader Card

T.C.
WRITE FOR CATALOG 56
DURABLE
ECONOMICAL
WOVENWIRE
SCREENS
KNOWN AROUND THE WORLD
TWIN CITY IRON & WIRE CO.
35 W. WATER STREET · ST. PAUL 7, MINNESOTA
Enter 1275 on Reader Card

HINGED PLATEGRIP
BELT FASTENER No. 500

Write for Circular
FOR HEAVY CONVEYOR BELTS OF CHANGING LENGTH
These heavy-duty belt fasteners make a strong, flexible joint in conveyor belts, belts of any width and of from 3/16" to 1/2" thickness. They offer special advantages in mines, quarries or industrial set-ups where length or position of belt is frequently changed, because sections can be removed or added at will. Joints are opened for this purpose by simply pulling out the hinge pin.
Easily and quickly applied on the job or in the shop. Special design gives deep compression into belting and smooth, flush joint.
ARMSTRONG-BRAY & CO.
5306 Northwest Highway, CHICAGO 30, U. S. A.
Enter 1277 on Reader Card

6-60
ROCK PRODUCTS
SUBSCRIPTION ORDER FORM

for	One year	Two years	Three years
U. S. POSSESSIONS & CANADA	☐ $ 3	☐ $ 4	☐ $ 5
PAN AMERICAN	☐ $ 8	☐ $14	☐ $20
FOREIGN	☐ $12	☐ $22	☐ $30

☐ Payment Enclosed ☐ Bill me later ☐ Bill my Company

YOUR COMPANY _____
COMPANY ADDRESS _____
_____
SIGNED _____
Your position or title _____
(This is important in evaluating editorial emphasis)
I would like to see more ROCK PRODUCTS articles on:
_____
_____

Please complete the form below indicating the principal product your company produces. If more than one, number in order of importance.

☐ Crushed Stone ☐ Lime
☐ Sand & Gravel ☐ Gypsum
☐ Slag ☐ Ready Mix Concrete
☐ Cement ☐ Concrete Products

Type _____
Other nonmetallic mineral (What?) _____

NEW MACHINERY

continued from page 174

Indicating transmitting instruments

A new line of pneumatic indicating transmitters has been offered which features high ambient temperature stability, accuracy within plus or minus ½ to 1 percent and a minimum of moving parts.

The Model 45 measures and transmits pressure, flow, temperature liquid level and differential pressures, and measuring elements are specifically designed for each process. All operate on a 20 psig. compressed air supply.

All parts of the instruments are enclosed in a weatherproof steel enclosure with a corrosion resistant vinyl plastic coating and gasketed access door. The large dial is fitted with a fluorescent pointer. (The Foxboro Co., Foxboro, Mass.)

Enter 224 on Reader Card

Hard-surfacing wire

A new line of precision-fabricated, cold-drawn hard-surfacing wires has been offered to rock products producers who do their own submerged-arc semi-automatic rebuilding work. Since the wire is cold-drawn to produce a tolerance of plus or minus .002 in. throughout the 100-lb. coils, the filler material is compressed nearly solid. This is said to yield a weld deposit with uniform physical and chemical properties.

The new product will be distributed under the name of Wear-O-Matic and will be produced in six alloys with wire diameters of ⅛, $\frac{5}{32}$ and $\frac{3}{16}$ in. (Alloy Rods Co., P.O. Box 1828, York, Pa.)

Enter 225 on Reader Card

New kraft paper

An extensible kraft paper with more "stretch" than conventional kraft paper will be offered to multiwall bag makers during the next few months. Expanda-Kraft paper is manufactured with about 5 times as much stretch lengthwise and about 1½ times more stretch crosswise as normal kraft paper. This gives the paper the ability to give under stress rather than to rupture.

The manufacturer claims that the new paper is strong, with great resistance to moisture. Its surface texture makes it ideal for printing, and it will be available in three colors: white, semi-bleached and natural. The new paper was designed primarily to be converted into multiwall bags for cement, lime and plaster, but can readily handle other granular materials. (Scott Paper Co., Chester, Pennsylvania)

Enter 226 on Reader Card

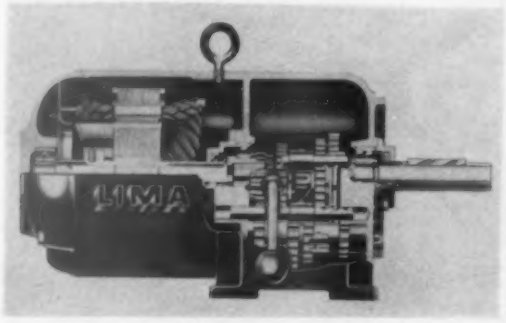
Remote indicator

This new remote indicator gauge eliminates the need for high-pressure or high-temperature lines at panel boards. Instead, the transmitter is located close to the point of measurement and uses only short lengths of impulse piping. Only a three-wire transmission line is then needed between the transmitter and the new Model 731 electric remote receiver. A plug-in connection to an amplifier is its only external connection.

Because of its all-electric and electronic construction, the new dial offers great speed of response, great accuracy and high sensitivity. Three sizes are offered to meet most indicating requirements: 4½, 6 and 8½-in. diameters—and all have a 270-deg. scale. (The Hays Corp., Michigan City, Indiana)

Enter 227 on Reader Card

Speedchanger



Many drive applications in the rock products industry call for exact ratios when speed changes are needed. The new R-3 gearshift reducer with integral motor offers a selection of four speeds. It is available for mounting in any position—ceiling or wall, horizontal or vertical with output shaft up or down.

The integral motor comes in three speeds, 900, 1,200 or 1,800 rpm. rated at 1, 1½, 2, 3 and 5 hp. to operate at 208, 220/440 or 550 v., 2 or 3 ph. 60 cy. current. A simple gearshift lets the operator select any one of four speeds to suit the requirement of conveyor, feeder or other machinery.

When 2-speed motors are used with the appropriate switches and controls, a selection of eight output speeds is possible. For special applications, drip-proof or totally enclosed motors are available. (Lima Electric Motor Co., Inc., Dept. 205, Lima, Ohio)

Enter 228 on Reader Card

END

Winslow TRUCK SCALES

PIT AND PITLESS TYPES

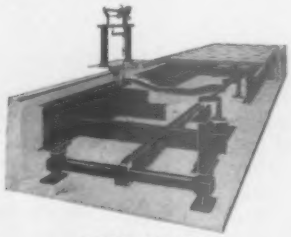
CABINET DIAL

Weight indication available includes ball bearing poise weigh-beams, direct reading and weight imprinting types, and dial equipment with or without weight printer.

Write or phone for more information
PHONE NORTH 1231

TYPE CS—PORTABLE—PITLESS

Type CS scales, pitless installation, roller bearings, heavy duty, low maintenance. Capacities 15 tons thru 50 tons. Platform sizes 18' x 9' thru 40' x 10', wood or steel deck.



TYPE S—PIT SCALE

Type S scales, pit installation, roller bearings, heavy duty, low maintenance. Capacities 15 tons thru 60 tons. Platform Sizes 22' x 9' thru 60' x 10' for wood or concrete decks.

WINSLOW GOVERNMENT STANDARD SCALE WORKS, INC.
4810 NORTH 25TH ST. TERRE HAUTE, IND.
SCALE MANUFACTURERS FOR OVER A HALF-CENTURY

Enter 1271 on Reader Card

HANCO
HEATED SCREEN
Attachments
Eliminate Cloth Blinding
On all types of Vibrating Screens
WRITE: **F. R. HANNON & SONS**
1605 Waynesburg Rd., S.E. Canton 7, Ohio
Cable address: HANCO

Enter 1272 on Reader Card

Slurries... *handled at lower cost*

The new WILFLEY MODEL K Centrifugal Sand Pump embodies important mechanical improvements especially adapted to the handling of cement slurry and results in stepped-up production and substantial power savings. Individual engineering. Write for details.

Buy WILFLEY for Cost-Saving Performance

A. R. WILFLEY and SONS, Inc.
Denver, Colo., U.S.A.

WILFLEY centrifugal PUMPS

Enter 1273 on Reader Card

MANUFACTURERS NEWS

Record shovel to be built

A CONTRACT TO BUILD a mammoth stripping shovel (right), largest mobile land machine ever built, has been awarded to Bucyrus-Erie Co. It will be more than twice the size of any shovel now in operation. The shovel will have a digger capacity of 115 cu. yd.; working weight will be about 14 million lbs., will require over 12,000 hp. to operate and will be controlled by a single operator. It will take two years to build and erect the shovel. It will be manufactured at Bucyrus-Erie's South Milwaukee plant.

Amer. Hoist & Derrick buys Michigan firm

JOHN E. CARROLL, president, American Hoist & Derrick Co., St. Paul, Minn., has announced the acquisition of Industrial Brownhoist Corp., Bay City, Mich. Mr. Carroll stated that the range of products manufactured by the Michigan firm complements the line built by American Hoist. Industrial Brownhoist will be operated as a wholly owned subsidiary of the purchaser and operations will continue at Bay City.

Baker opens Portland branch

BAKER INDUSTRIAL TRUCKS, Div. of Otis Elevator Co., announces the opening of a sales and service branch at 5320 S.E. 26th Ave., Portland 2, Ore.

Mr. Wilton Smith, who has had broad experience in the Materials Handling field, has been appointed Portland branch manager.

A-C promotions

NEWLY NAMED SALES representatives to district offices of Allis-Chalmers Industries Group, Milwaukee, Wisc., are Eugene R. Glazier, Denver, and Harvey L. Stahl, Dallas. The men recently completed the company's training course for graduate engineers.

Appointment of W. C. Henderson as manager, utility sales, and of A. W. Leighton as manager, industrial sales, Los Angeles district, has also been announced. Mr. Henderson, who succeeds Mr. Leighton, has been sales representative in the Los Angeles district since 1953. He joined the company in 1950. Mr. Leighton came to the company in 1947 and has been manager of utility sales since 1956.

Other new appointees that have been announced are: Thomas E. De Wan, assistant engineer, screen section, processing machinery department; Lawrence G. Karvonen, assistant engineer, office of director of mechanical engineering; Donald F. Lowe, research engineering scientist, process and mechanical research group, and George F. Warner, research process laboratory.

(Continued on page 180)

Enter 1212 on Reader Card

World's Longest Quarry Shovel Boom

This is a picture of the solution for an unusual problem—involving a 160-foot boom, the world's largest on a quarry shovel.

A "special," it typifies Marion's ability and willingness to go to unusual lengths to solve customer problems.

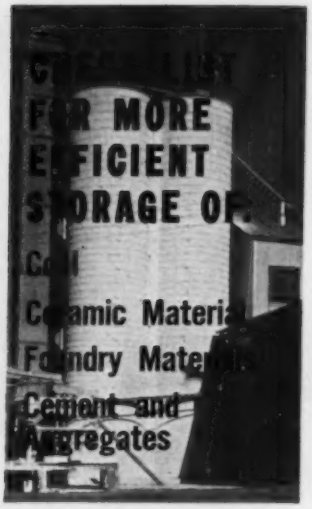
The machine is a Marion 5323 which carries an 11-yard dipper, 95-foot handle and 160-foot boom to deal with a rocky bank ranging up to 135 feet in height. This machine's ability to dump 326 feet away from the wall made it the ideal answer to this big quarry's problem.

Why not let Marion specialists take an imaginative look at your quarrying and mining needs?

CONSULT **MARION** MINING SPECIALISTS
for lowest costs on your property!

MARION POWER SHOVEL COMPANY • Marion, Ohio, U.S.A.

A Division of Universal Marion Corporation



For bulk storage of any material, you can't beat the versatility of a Marietta storage system to save you time, money, space and materials. Marietta Concrete Silo Systems are engineered to your exact requirements for safe, economical storage and complete integration with any materials handling equipment.

When you consult Marietta, trained personnel make an exhaustive study of your operation, define your precise needs and then recommend and design a storage system to meet these needs. You benefit from (1) elimination of bag or ground storage; (2) faster materials handling; (3) reduced material loss; (4) complete weather protection; (5) better use of storage area; (6) lower inventory, and (7) lower insurance rates.

For catalog and complete information on how Marietta Industrial Silos can modernize your bulk materials storage, simply check below the type of material you want to store, clip and attach to your letterhead. Your request will receive our immediate attention.

Send Catalog and Information
- ☐ Sand & Gravel
- ☐ Cement
- ☐ Coal
- ☐ Ceramic Materials
- ☐ Other

Marietta
CONCRETE DIVISION
AM AMERICAN-MARIETTA CO.
Marietta, Ohio

Enter 1263 on Reader Card

MANUFACTURERS NEWS

(Continued from page 178)

Palletizing seminar held in Allentown

A SEMINAR on palletization of cement bags sponsored by Hudson Pulp & Paper Corp. and Food Machinery & Chemical Corp. was held April 7, 1960. The seminar and panel discussion was attended by 15 leading cement producers. B. C. Drumm, sales manager of the Multiwall Div. of Hudson Pulp & Paper Corp. was moderator. Serving on the panel with him were Ted Garson, Ray Cummings and Jim Walsh of Hudson together with Don Derricott, Irv Blondon and Lee DeWent of FMC and Ray Frase of Signode Steel Strapping Co.

The panel members discussed various aspects of palletization of cement bags for shipment by truck. Pros and cons of wood pallets versus cardboard pallets, proper pallet sizes and cost figures per pallet were covered. Hudson offered its services as intermediary in setting up future seminars and discussions on palletization of packaged cement.

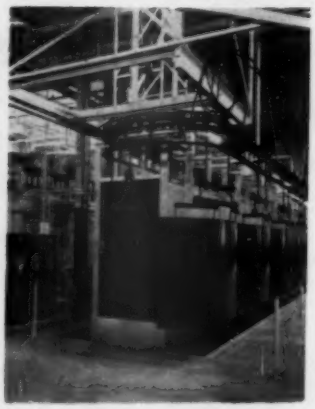
Kramm—sales engineer for Traylor

DOUGLAS J. KRAMM has been appointed lime and chemical kiln sales engineer by the Traylor Engr. and Mfg. Co. div. of the Fuller Co.

Bay City Shovel sells stockholding

UNIT CRANE & SHOVEL CORP., Milwaukee, Wisc., has announced the purchase of all stockholdings of Bay City Shovel, Inc., Bay City, Mich., by the Milwaukee company. Operations of the Bay City plant will be continued under the direction of its company officials. Bay City Shovel, Inc. is the manufacturer of cranes, shovels, backhoes and draglines. Unit Crane makes similar machinery. Unit Crane & Shovel recently acquired manufacturing rights for Coles Cranes from Steels Engr. Products Co., Sunderland, England.

New plant for A. O. Smith

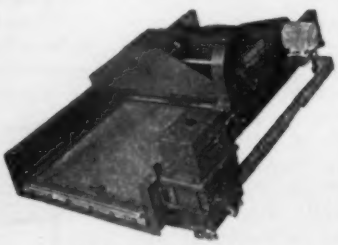


A NEW, $2.1 MILLION PLANT addition gives A. O. Smith Corp.'s Harvestore Products Div. three times the production facilities for Permaglas bulk materials handling and storage equipment for industry. The new plant, located at Kankakee, Ill., with 164,000 sq. ft. of floor space, was officially opened on April 13, 1960, after being under construction about a year. It includes, according to Mr. Lee Osborne, general manager, the first completely automated production line for the fusing of glass to steel. The automated production line has nearly 3,000 ft. of overhead conveyor. The photo shows a line of cobalt-blue, glass-coated steel sheets emerging from the glass-fusing furnace.

(Continued on page 182)

Difficult Fine Mesh Screening is Easy for the Leahy® Screen

For screening difficult or damp materials, such as lime, ag-lime or silica sand, there is none to match the Leahy No-Blind® screen with fully integrated FlexElex® heating. It's unexcelled efficiency stems from the fact that all screening factors, even the heating, are completely integrated. Such inclusive outstanding design offers specialized equipment for your special screening job. Send for Bulletin 16-EH.



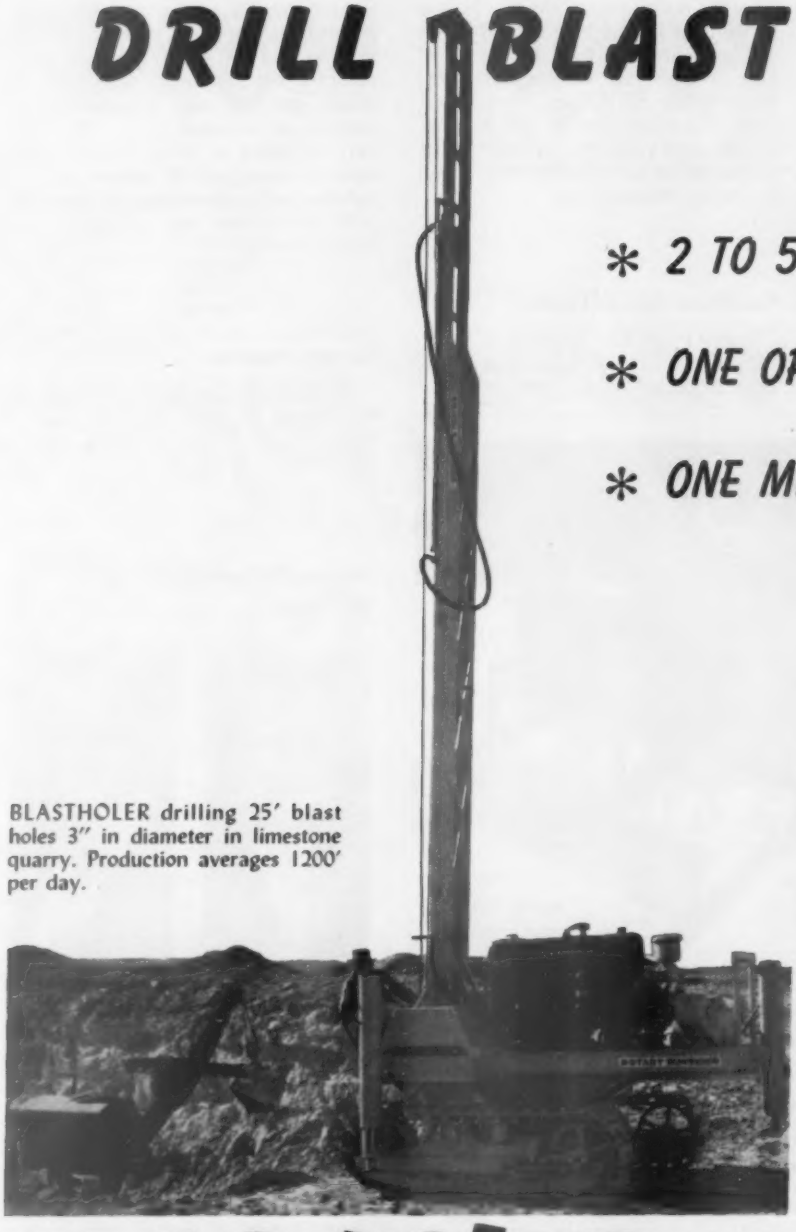
Made by the Original Deister Co. Incorporated 1906

The DEISTER CONCENTRATOR COMPANY, INC.
915 Glasgow Avenue — Fort Wayne, Indiana

Enter 1265 on Reader Card

DRILL BLAST HOLES

* 2 TO 5 TIMES FASTER
* ONE OPERATOR
* ONE MACHINE



BLASTHOLER drilling 25′ blast holes 3″ in diameter in limestone quarry. Production averages 1200′ per day.

BLASTHOLER

A self-propelled rotary drill, the BLASTHOLER is mounted on tracks or dual pneumatic tires — covers terrain like a bulldozer. The BLASTHOLER requires only one operator — carries its own air for cleaning blast hole. In limestone quarries meeting highway specifications, the average time for 20′ holes is 3 to 4 minutes. Many BLASTHOLERS have drilled more than a million feet within a 2-year period. Chances are the BLASTHOLER can improve your production record and save you money, too! *Contact your nearest dealer for a cost-cutting demonstration today!*

BLASTHOLER DEALERS

The W. W. Williams Co.
Columbus, Ohio

Reid-Holcomb Co., Inc.
Indianapolis, Ind.

Watson Equipment Co., Inc.
Pittsburgh, Pa.

Ray C. Call Co., Inc.
South Charleston, W. Va.

Illinois Road Equipment Co.
Springfield, Ill.

Williams Tractor Co.
Louisville, Ky.

Hi-Way Machinery Co.
Dallas, Texas

Bublitz Machinery Co.
North Kansas City, Mo.

James W. Bell Co., Inc.
Cedar Rapids, Iowa

Anderson Equipment Co., Inc.
Omaha, Neb.

Wylie-Stewart Co., Inc.
Oklahoma City, Okla.

Wisconsin Drilling & Equipment Co., Inc.
Madison, Wis.

Contractors Machinery Co.
San Antonio, Texas

DRILLING ACCESSORY AND MANUFACTURING COMPANY, INC.
2006 South Industrial Boulevard
Dallas, Texas

Enter 1241 on Reader Card

(Continued from page 180)

Executive appointments for Marion

TWO MAJOR EXECUTIVE appointments for the Marion Power Shovel Co., Div. of Universal Marion Corp., have been announced.

Adrien F. Busick, Jr., formerly executive vice president and general manager, is now president and general manager of the division. The presidency of the division has been vacant since the resignation of the late Milton T. Smith in July of 1958. David Reich was appointed assistant to the president of Universal Marion Corp. Mr. Reich retains his position of vice president—administration of the division. In his new capacity, he will act as liaison officer between the division and Universal Marion Corp.

Smith advances Lippert

SMITH ENGR. CO., Milwaukee, Wisc., announced that Mr. Ralph Lippert has been advanced to the position of assistant manager of the portable plant department. He came to the company in 1946. In 1958, Mr. Lippert was promoted to the position of supervisor of design portable plant department. In addition to his other duties, Mr. Lippert will assist in the pricing of portable and semi-portable plants and assist the sales department in working with distributors and customers on these products.

Smidth moves

F. L. SMIDTH & CO.'s new address since April 29, 1960, has been Rockefeller Center, 1270 Ave. of the Americas, New York 20, N.Y.

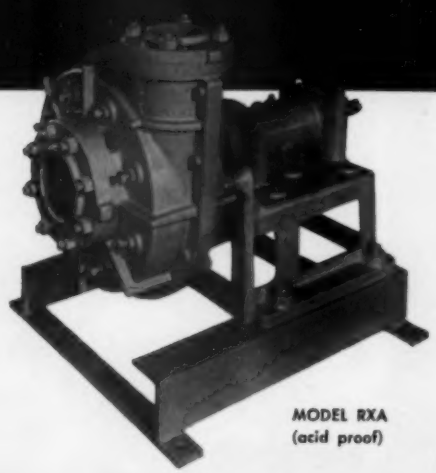
Barber-Greene and Smith to merge

BARBER-GREENE CO., Aurora, Ill., and Smith Engr. Works, Milwaukee, Wisc., have announced the approval of a proposed merger by the Boards of Directors of the two companies. The proposal is based on an exchange of common stock—six shares of Barber-Greene for each share of Smith Engr. Works. Barber-Greene is the manufacturer of asphalt mixing, paving, ditching and materials handling equipment. The Telsmith line of products, including crushing and screening equipment, is manufactured by Smith Engr. Works.

Under the proposed plan, the merged company will operate under the name of Barber-Greene Co., under its present officers, with the addition of G. L. Smith (left) and Donald D. Barnes as vice presidents and members of the Board of Directors. Smith Engr. Works will operate, under its present management, as a division of Barber-Greene. Mr. Smith will become president and Mr. Barnes will become executive vice president of the Smith Engr. Works division. Special meetings

NEW!

PERFORMANCE-PROVED CERAMIC-LINED SAND PUMP



MODEL RXA (acid proof)

ARE YOU USING pumps for transferring fines? Is the volume in the range of 110′ head-150 GPM to 70′ head-600 GPM?

ARE YOU TIRED of replacing impellers, liners, shells, sleeves, seals, bearings, shafts, bolts, nuts, gaskets, etc., every few months?

ARE YOU WISHING someone would produce a pump worthy of your expectations? Something that would hold up for say — 14 months? 18 months? 2 years!

YOU WILL FIND the ultimate in wear resistance in ceramic lined pumps using silicon nitride bonded silicon carbide wear parts.

SOUND EXPENSIVE? Not at all. Cost is comparable to alloyed iron or rubber lined pumps.

For additional information on the new MODEL RXA Ceramic-Lined Sand Pump, write:

The KANSAS CITY HAY PRESS COMPANY
801 Woodswether Road Kansas City 6, Missouri

Enter 1262 on Reader Card

of the shareholders of the two companies have been called to vote on the proposed merger, which was planned to become effective May 31, 1960.

Ehrsam appoints and transfers

HARVEY SHANK has been appointed manager of Ehrsam Pacific, San Francisco, the west coast subsidiary of The J. B. Ehrsam & Sons Mfg. Co. Mr. Shank will be responsible for sales of the full line of Ehrsam material handling equipment in the states of California, Washington, Oregon, Nevada, Idaho and western Montana.

The former manager of Ehrsam Pacific, Wm. C. Thomas, has been transferred to Atlanta, Ga., where he will assume his duties as southeastern district manager. Mr. Thomas will be responsible for sales in the states of Georgia, Kentucky, West Virginia, North Carolina, South Carolina, Mississippi, Alabama and Florida.

Hardinge Co. expansion program

HARLOWE HARDINGE, president of Hardinge Co., Inc., York, Pa., announced that the Hardinge Mfg. Co. will expand and modernize its foundry facilities to offer its customers better service on castings and "jobbing" work. The enlarged foundry will include the latest in core ovens, sand mixing apparatus, cranes and other materials-handling equipment. The first unit of the Hardinge Foundry was erected about 1895, the first addition was made about 1915 and the present expansion program climaxes a series of improvements in the 65-year old foundry.

Foxboro opens two branch offices

TERMINATING SALES representative arrangements in the Northwest, The Foxboro Co., Foxboro, Mass., manufacturers of industrial instrumentation, has opened two new branch offices—one in Portland, Ore., the other in Seattle, Wash. With the establishment of these company-staffed offices, Foxboro now offers direct, undivided application engineering assistance to instrument users in the Northwest.

The Portland office is staffed by F. J. Renner, branch manager; L. E. Schlavin, sales engineer, and W. C. Kenzler, service engineer. Serving the Seattle area are I. D. Hummel, branch manager; D. O. Nielsen, sales engineer; C. L. Liakos, office engineer, and W. E. Talbert, service engineer. In addition to these two offices, Foxboro also maintains a regional office, branch factory and warehouse at San Leandro, Calif.

FMC adds two names

HYDRODYNAMICS DIV., Food Machinery and Chemical Corp., Los Angeles, Calif., has introduced a new publication, the "Hydro-Scope," and announced a new name for the Peerless Pump Div., namely, Hydrodynamics Div. Food Machinery and Chemical Corp. As the division has grown in size and scope, the company has frequently encountered confusion, both from within the organization and with customers and other firms, concerning the relationship between Peerless and the other operating groups within the Peerless Pump Div. To enable each operating component to continue with its own individual identity and yet be a member of an FMC division, the company has decided a name change for the division was in order.

END

Tailor-made to give you more efficient blasting! **BEMIS EXPLOSIVES BAGS**

Bemis Explosives Bags for ammonium nitrate and nitro-carbo-nitrate explosives are tailor-made to your requirements — to give you more efficient blasting.

More economical: Use of Bemis Explosives Bags and ammonium nitrate mixtures can save up to 50 percent on explosives costs.

Easy to fill: Bemis provides technical assistance, manufactures equipment to speed up bag filling.

Wet hole or dry hole . . . here are just a few of the Bemis Explosives Bag constructions in use:

Burlap bag with heavy-duty polyethylene liner. The rugged burlap absorbs the punishment of handling or jagged holes. Poly liner provides waterproofness.

Flexiply® bag with poly liner. Here three plies of rugged creped wet-strength kraft provide the toughness.

Laminated bags. Constructions of burlap, kraft paper, polyethylene and pliofilm — in varied combinations — are all performing satisfactorily in the pits and on construction sites.

Write today for sample bags and additional information on Bemis Explosives Bags.

Bemis

Where flexible packaging ideas are born

General Offices—408-M Pine St., St. Louis 2

Enter 1261 on Reader Card

WHERE TO BUY

You may find just what you're looking for in the used equipment, employment and professional advertisements below. Box numbers are confidential and advertisers' names will not be disclosed. Send replies to: Box Number (shown on ad), c/o ROCK PRODUCTS, 79 W. Monroe St., Chicago 3, Ill. All replies will be forwarded to advertisers daily.

ROCK-BOTTOM PRICES ON TOP QUALITY EQUIPMENT

Conveyco Mahile Stacker

CONVEYORS
1—18" x 178' Belt, steel frame, 7½ HP.
3—6" x 43' Carpco, BC-68, sliding belt.
2—6" x 33' Carpco, BC-68, sliding belt.
1—60" x 150', steel framework, 100 HP. gearmotor
1—42" x 1250', Link Belt, 2—100 HP. gearmotors
1—36" x 645' Link Belt, 100 HP. gearmotor
1—42" x 870' Link Belt Trailing Type and Conveyco mobile stacker, 100 HP. gearmotor 440 V.

CRUSHER, JAW
1—10 x 20 Rogers Iron Works, with drive
1—10x21 Telsmith with motor & drive
1—10 x 30 Pacific, Type KH, motor & drive
1—2¼" x 4" Braun chipmunk, 2 HP. 220/440 V
2—2¼" x 3 Braun chipmunk, ¾ HP. Motor
1—15" x 36" Universal, 50 HP. 220/440 V.

CRUSHER, GYRATORY & CONE
1—2'4" Traylor TY, Less Motor
1—4' Symons, Shorthead, 150 HP. motor
2—5½' Symons, standard, 200 HP. motor

CRUSHING PLANTS
1—10" x 36" Pioneer Model 40 V, UD 24 Diesel Power.
1—15" x 24" Cedar Rapids Portable, Case Gas Power
1—10" x 16" Cedar Rapids Pitmaster, Complete UD 14 Diesel

DRYER
1—36" x 13' Hardinge Ruggles Cole Complete excellent. Located Clearwater, South Carolina

FEEDERS
1—36" x 8'4" Link Belt, Apron, 3 HP. motor
1—20" x 6' Schaffer Poidometer Constant weight
1—36" x 72" Jeffrey Traylor Grizzly Feeder, 440 V.

HOPPER
Conveyco truck dump station, Hopper 15' x 15' x 10' with tilting Grizzly, 4' x 8' plate feeder, all complete with Hydraulic cylinders, gearmotor drives.

KILN
1—48" x 30' Hardinge Ruggles Cole, Complete Excellent. Located Clearwater, South Carolina

MILLS, BALL & ROD
1—4' x 10' Marcy Rod Mill, 75 HP. 440 V.
1—3' x 8' Hendy Rod Mill, 30 HP. 440 V.
1—5' x 10' Marcy Ball Mill, 100 HP. 440 V.

SEPARATORS
1—Type D-1A Exolon, 3 unit Vertical Roll Type
6—Type MI-418 Carpco High intensity
2—Type HT-460 Carpco, High Tension

SCREEN
1—9' dia. x 54½' Yuba Trommel, 100 HP. West. 440 V.
4—4' x 12' Tyler Ty-Rock, F-600, 10 HP. 220/440 V.
1—4' x 8' Symons Rod Deck Screen, 7½ HP. 220/440 V.
1—4' x 8' Tyler Hummer, Type 38
2—6' x 12' Allis Chalmers lowhead, 10 HP. 220/440 V.
6—4' x 5' Tyler "Hummer", type 50 Head

SHOVELS
1—Model 111 M Marion shovel & Dragline, Diesel Electric 4 yd., 100' Dragline Boom
1—Model 170 B Bucyrus Erie Electric shovel Esco Bucket, 2400/4160 Y, Rotoclone Air Filter system, Complete with rubber cable, and Junction Box.

WEIGHTOMETER
1—12" Merrick Type S. Excellent Condition
1—24" Merrick Model E.

WHEELS, DEWATERING
4—12'—6" x 4' Conveyco Sand Wheels, Complete with Tank, w/20 HP. West. gearmotors, Exc.

GET OUR LIST of EQUIPMENT

AMERICA'S LARGEST MINING EQUIPMENT LIQUIDATORS

MACHINERY CENTER INC.

1201 South 6th West PO Box 964 HU 4-7601 Salt Lake City 10, Utah

YOU CAN SAVE MONEY AND MAKE A PROFIT WITH THIS EQUIPMENT

QUARRY EQUIPMENT
Cedarapids 2236 Primary Jaw Crushing plant.
Cedarapids Jr. tandem crushing plant, 1036 jaw.
Cedarapids Portable Screening Unit.
Universal 2436 Jaw Crusher. Reconditioned.
Austin-Western 1536 Jaw Crusher. Reconditioned.
Cedarapids 1036 Jaw Crusher. Reconditioned.
Cedarapids 1216 Twin Jaw Crusher. Reconditioned.
2—Cedarapids 4033 hammermills rebuilt.
Cedarapids 3033 Hammermill.
Cedarapids 2033 Hammermill. Rebuilt.
Cedarapids 4' x 14' 2-deck screen.
2—Cedarapids 4'x12'. 2-deck screens.
Robins 4' x 9' triple deck screen.
Telsmith 3' x 8', 3-deck inclined screen.
Aggregates 4' x 14', 3-deck inclined screen.
54" dia. x 23' lg. revolving screen.
Cedarapids 42" x 10' apron feeder.
Cedarapids 36-8, 3-compartment charging hopper, apron feeder, bucket elevator. New.
McLanahan & Stone 8"x30' double log washer.
Smithco 10-Yd. Portable Charging Bin.
8' x 12', 8' x 18', 12' x 23' bins in stock
18", 24", 30", 36" conveyors & belting
Smithco 30"x34', 7½ H.P. Belt Conveyor.
Barber Greene Model 848 Asphalt Plant.

SHOVELS AND CRANES
Lorain L-50J, 1-yd. Diesel Cranehoe
Lorain L-36, ¾-yd. diesel dragline. Excellent.
Lima 34 Paymaster ⅔-yd. diesel shovel. Good.
Unit 1020 ¾-yd. diesel powered shovel.
Insley K-12, ½-yd. gas backhoe
Bucyrus-Erie 10B, ⅜-yd. Gas Shovel.
Lorain MC-414, 20-ton Moto-Crane.
Link Belt HC-90, 25-ton truck crane.
Michigan TLDT-30, 10-ton truck crane.
Lorain MC-254, 15-ton Moto-crane.
Lorain TL-30, 10-ton Moto-crane.

TRUCKS, TRACTORS, SCRAPERS
2—Euclid 13-yd. bottom dumps. Good.
1—Euclid 27FD, 15-ton rear dump.
1—Euclid 2FD, 15-ton rear dump.
1—Euclid tractor with 3200 gallon water tank.
2—Caterpillar D-8 with push block
1—Caterpillar D-8 with cable angle dozer.
1—Caterpillar HT-4, 1½-yd. Traxcavator.
1—Caterpillar D-4 tractor only.
1—Euclid TC-12, twin engine tractor
1—International TD-34 with cable angledozer.
1—Letourneau Super C Tournadozer. Excellent.
1—Allis-Chalmers HD-9-G Tractor with loader.
2—Allis Chalmers TS-360, 15-yd. scrapers.
2—Euclid TS-24, 24-yd. twin engine scrapers
2—Euclid 68 FDT, 18-yd. twin engine scrapers.
3—Euclid 18-yd. overhung engine scrapers.
1—Euclid 15½-yd. six wheel scraper.
1—Euclid 7-yd. overhung engine scraper.

Inquire for list of drilling equipment, air compressors, diesel power units, generators, shovel & backhoe attachments.

L. B. SMITH, INC.

Camp Hill, Pa.
Phone Harrisburg REgent 7-3431

CONVEYORS Apron type 30" x 33'—24" x 18'
CRUSHER Penna CA-3-38 Reversible impactor
PUG MILL 30" x 14'
PUMPS Deming centrifugal 5 x 4 and 6 x 5
SCREENS Telsmith 3 x 10 Deister 4 x 12
VACUUM CLEANERS Hoffman portable 7½ & 10 HP

G. & W. H. CORSON, INC.

Plymouth Meeting, Pa.

FOR SALE
EUCLIDS: Rear, Bottom and Scrapers
450W Bucyrus-Erie Drag, 14 yd.
15W Bucyrus-Erie Dragline, 14 yd.
9W Bucyrus-Erie Dragline, 8½ yd.
7W Bucyrus-Erie Dragline, 7 yd.
5W Bucyrus-Erie Dragline, 5 yd.
200W Bucyrus-Erie Dragline, 8 yd.
170B Bucyrus-Erie Shovel, 6½ yd.
120B Bucyrus-Erie Shovel, 5 yd.
54B Bucyrus-Erie Shovel, 2½ yd.
38B Bucyrus-Erie Shovel, 1½ yd.
80D Northwest Shovel, 2½ yd.
4500 Manitowoc Dragline, 5 yd.
2400 Lima Dragline, 6 yd.
1201 Lima Dragline, 3 yd.
1½ yd. Marion Shovel, New in 1956.
7400 Marion Walking Dragline, 9 yd.
SHOVELS—DRAGLINES—CRANES
(All sizes, makes, Crawler and walking type)
WILLIAM LUBRECHT, III
CONSTRUCTION EQUIPMENT
311 W. Diamond Ave. Hazleton, Penna.
Telephone GLadstone 5-4041 or 5-0253

FOR SALE

New Bulk Cement Trailers
1—Gravity 1—Auger
Designed for 50' O.A.L. & 73,280 G.V.W.
Call or write Bill Becker

DAN DUGAN OIL TRANSPORT CO.

Sioux Falls, South Dakota
Phone ED 4-6011

ATTENTION REX MIXER FLEET OWNERS

Terms—Used Mixers—Terms

Size	Serial Number	Truck	Aux.	Mixer End	Water Tank
6½ Yd.	WAM-103	—	—	Open	95
5 Yd.	TR-1715	—	—	Open	Large
5 Yd.	TR-1875	—	—	Seal	Large
4 Yd.	WD-153	—	—	Seal	Flush
4 Yd.	WD-292	—	—	Seal	Flush
3½ Yd.	TD-1799	IH LF174	3 Sp.	Seal	Large
3½ Yd.	TD-1852	IH LF174	2 Sp.	Seal	Large
3½ Yd.	TD-1906	IH LF170	2 Sp.	Seal	Flush

CLEANED—SAND BLASTED—PAINTED—CHECKED OVER—TERMS
TRADE-INS ON NEW REX MIXERS

EIGHMY EQUIPMENT COMPANY
Pierpont at W. State St. WO 4-6706
ROCKFORD, ILLINOIS

HEAVY EXCAVATION EQUIPMENT
DRAGLINES, SHOVELS, CRANES, DRILLS, TRUCKS

15-W Bucyrus Erie Elec. Drag, 215', 12 yd.
450-W Bucyrus Erie Diesel Drag, 165' with extra 10, 12, 13 and 14 yd. buckets.
9-W Bucyrus Erie Elec. Drag, 165', 10 yd.
9-W Bucyrus Erie Diesel Drag, 165', 12 yd.
7-W Bucyrus Erie Diesel Drag, 140', 7 yd.
7400 Marion Diesel Drag, 175', 13 yd.
71-B B.E. Crane with 160' boom
625 Page Diesel Drag, 150', 10 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
2400 Lima Elec. Drag, 130', 6 yd.
2400 Lima Diesel Drag, 130', 6 yd.
4500 Manitowoc Drag, 120', 5 yd.
120-B Bucyrus Erie Elec. Drag, 115', 5 yd.
111-M Marion Drag, 100', 4 yd.
1601 Lima, 4 yd. Shovel/Drag
3900, 3500 & 3000 Manitowoc Cranes
5560 Marion 26 Yd. Elec. Shovel
151-M Marion 7 Yd. Elec. Shovel
170-B Bucyrus Erie 6 yd. Elec. Shovel
1600 P & H 6 yd. Electric Shovels
4161 Marion 6 Yd. Elec. Shovel
2400 Lima 6 yd. Std. & H.L. Shovels
120-B Bucyrus Erie 4 Yd. Elec. Shovel
4500 Manitowoc 5 Yd. H.L. Shovel
1201 Lima 3½ Yd. Standard Shovel
111-M Marion Standard & H.L. Shovels
3500 Manitowoc Standard & H.L. Shovels
54-B Bucyrus Erie Standard & H.L. Shovels
Model T-650 REICHdrill Truck Mtd. Rotary and Down-The Hole
Ingersoll-Rand Truck Mtd. & Crawler Mtd. Drillmasters
McCarthy & Compton Coal Auger Drills
Euclid Trucks, Dozers, Attachments, etc.

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

ROTARY DRYER: One 3' x 34', ½" shell, complete with 7½ H.P. gearhead motor, exhaust fan, etc.

KILN: One Rotary Kiln, 4½'x40' with rotoclone, 7½ H.P. motor, 3 H.P. motor, speed reducer, classifier, kiln burner, etc.

JAW CRUSHER: One 40 x 42" Allis Chalmers with 150 H.P. slip ring motor and controls, V-belt drive, with or without one heavy duty Apron Feeder size 42" x 14'3" with motor, speed reducer, push button control.

DREDGE: One 10" Diesel electric Dredge with 34' ladder, 200 yds. per hour capacity, excellent condition, reasonable.

SINGLE DRUM HOISTS:
1—84" dia., 63" face, 2⅛" rope, 300 or 450 H.P.
1—84" dia., 102" face, 2" rope, 350 H.P.
1—86" dia., 80" face, 2" rope, 250 H.P.
1—84" dia., 63" face, 1⅜" rope, 150 H.P.
All the above built 1956.

DOUBLE DRUM HOIST:
1—Nordberg double clutched drum 10' x 10', 1¼" rope, 1250 H.P., 1200 FPM.

All the above with post brakes, Lilly controls, 2200 volt motors and controls.

Other Hoists 100 to 1500 H.P. for shaft or slope.

WE BUY AND SELL EQUIPMENT THROUGHOUT NORTH AND CENTRAL AMERICA

A. J. O'NEILL
Lansdowne Theatre Building
LANDSDOWNE, PA.
Phila. Phones: MAdison 3-8300—3-8301

FOR SALE

Four used 6 yard Koehring Dumptors, serial No's D3131, D3349, D3905, D3937. These dumptors are powered with 4-71 GMC Diesel Engines and have been reconditioned and are ready to use. Your choice for $5,000. Contact

Fry Coal and Stone Company
Box 120, Mercersburg, Pennsylvania
Phone: 51

JACKBITS
TUNGSTEN CARBIDE

New, clean, "F", "D", "H", "200", "400", "600", "700" and "1000" thread specifications.

All sizes—Not War Surplus.
Write For List—**SACRIFICE PRICES**

JULIUS M. FOGELMAN
1649 Perkiomen Ave., Reading, Penna.

DEPENDABLE USED MACHINES
Shovel front for Lorain 77B 1½ yd. w/PM shovel bucket

Northwest 105 crane	Link Belt shovel LS85	Jeep Trencher w/dozer blade
Cat. D-7 angle dozer	614 ½ yd. Unit backhoe	Lorain TL25K ¾ yd. dragline
Amer. 375 ¾ yd. dragline	Lima 34 Paymaster backhoe	Eagle 24"x18' single screw
P&H 150 ½ yd. clamshell	Bay City 25 ½ yd. dragline	360 Hopto on Army carrier
Lorain 20 ton truck crane	360 Hopto on Army carrier	Terratrac 500 w/hoe & trailer

This equipment rebuilt in our modern plant by expert mechanics. Come See it!

10002 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Illinois

---

BONDED® VIBRATING SCREENS

PROMPT SHIPMENT OF ALL MODELS

GENERAL DUTY SCREENS

PERFECT BALANCE AND SHARP ACTION. Eccentric weight mechanism, spring mounted. 1 to 3 decks, 2' x 4' to 3' x 8'. **WRITE FOR "SEVEN SECRETS OF SUCCESSFUL SCREENING" IN BULLETIN NO. 1086.**

For the accurate and economical screening of sand, gravel, crushed stone, ores, broken rock, slag, clay and cement products and lightweight aggregates. All Bonded Screens built of structural steel, welded and reinforced with additional members on all points of strain and factory tested and balanced. Available in enclosed models where dust and flying particles need to be contained. For almost any type of screening operation, wet or dry.

Priced from $443

SPECIAL SERVICE SCREENS

WRITE FOR BULLETIN #1224 TYPE C

For scalping middle-range pieces and accurate sizing of fines and above listed products but where quantity and feed do not warrant a larger capacity, heavy duty model. Medium to heavy construction. Can also be suspended from four steel cables and springs for portable or temporary installation. Vibration remains in working screen body. No shaking of tipple, building or platform.

Priced from $487

HEAVY DUTY SCREENS

FACTORY BALANCED, CONTROLLED VIBRATION. Four bearing positive throw eccentric shaft; 3' x 6' to 5' x 14', 1 to 5 decks. **WRITE FOR BULLETIN NO. 1087 AND 9 REASONS WHY BONDED IS YOUR BEST BUY.**

For high tonnages, heavy scalping and multiple sizing of such minerals and industrial products as handled by above models. No dead spots. Springless live-rubber mounting of screen body controls vibration. Screen cloth and plate in all models reversible for longer life. Their finished edges prevent plates from splitting and cloth from ravelling.

Priced from $1620

BONDED SCALE AND MACHINE COMPANY
128 BELLEVUE COLUMBUS 7, OHIO
PHONE: Days. HI 4-2186 Evenings: AX 1-2213

STILL LIQUIDATING

CRUSHING & GRINDING PLANT
MANCHESTER, CONN.

Symons 3' shorthead cone crusher
Buchanan 13" x 24" JAW, 50 HP
Hardinge 7' x 36" conical pebble mills, silex stone lined
Allis-Chalmers 6' x 18' pebble mill, buhrstone lined.
Abbe Ang. #1B 6' x 8' pebble mills, buhrstone lined, 30 HP
Christie 4'6" x 45' rot. dryer.
Steel bucket elev.; to 40' high

SEND FOR CIRCULAR #360A

KILNS—DRYERS

11' x 10' x 175' Vulcan Kiln, $\frac{11}{16}$"
11' x 155' Traylor Kiln, ¾" welded
10' x 78' National Iron Dryers, ¾" shell, center tube
8'8" x 70' Hardinge #XA18 dryers, ⅝"
8' x 114' United Kiln, ⅝"
8' x 40' Stearns-Roger dryers, ⅝"
7'6" x 62' dryer or kiln, ½"
7' x 50' Allis-Chalmers dryer, ⅝"
6' x 7' x 100' Kiln, ½" shell
4'6" x 45' Christie dryer, $\frac{5}{16}$"
3' x 23' Standard dryer, ¼"

BALL ROD & PEBBLE MILLS

Kennedy 7' x 9' ball, 150 HP
Hardinge 10' x 48" conical ball
Hardinge 7' x 36" conical peb.
Hardinge 4'6" x 16" conical ball
Allis 6' x 18' pebble-tube
Allis 5' x 22' ball-tube, 150 HP
Allis 6' x 16' ball-tube
Allis 5' x 5' ball, 75 HP

CRUSHERS—PULVERIZERS

Symons 3' shorthead cone
Farrel 36" x 15" jaw
Farrel 20" x 6" jaw
Buchanan 13" x 24" jaw
Mitchell 18" x 9" jaw
Penna. #5060 hammermill, 400 HP, 47" x 60", UNUSED
DIXIE #5060 hammermill, 500 HP
B. & W. #E32 pulv., 75 HP
Robinson 36" saw tooth crusher

PERRY EQUIPMENT CORPORATION

1418 N. Sixth St. Phila. 22, Pa.

POplar 3-3505

MOTORS AND GENERATORS

All sizes, new and rebuilt. Starters, accessories, pulleys and repair parts. Gear motors, Falk Shaft mounted Speed Reducers, couplings and V-belt drives.

EXPERT REPAIR SERVICE
NUSSBAUM ELECTRIC COMPANY
220 E. Douglas Ave., Fort Wayne, Ind.

SPECIALS!!!

Buffalo type B 60 ton motor truck scales 45' x 12' platform, tape recorder and printer
Fuller-Kenyon Type "C" cement unloader.
Fuller Kenyon Airslide cement conveying system
Truck scales 20 ton, 20'x8' American Pitless
Norblo Automatic bag type dust arrester.
No. 10 Norlbo Type HELS collectors
Howe scale No. 82 exact weight indicator
St. Regis Type 100 LS valve bag filling machine.

MILLS—CRUSHERS—KILNS—DRYERS

JAW: Reliance, 14x24, Buchanan 18x36, 36x42, Type C 30x42, Cedar Rapids 2036, Traylor 28x36, 36x48, 56x72, Lippman 24x36; Universal 30x42; Superior McCully 42x40.
GYRATORY: Al. Chal. 6, 5K, 10", 16, Gates 12K; Traylor TZ Kennedy Van Saun 37½.
CONE: Symons 3', 4¼', 5½', Kue-Ken 36"; Traylor TT4; Telsmith 3'.
ROLL: Cedar Rapids 24x16, 55x30; Al. Chal. 37x16, 42x16. Pioneer 40x22, 40x24 triple, 54x24; Telsmith 40x22; Universal 30x18; Lippman 40x20.
MILLS—ROD—Denver 4x8, 4x10; Hardinge 4x10; Marcy 3x5, 8x12.
TUBE: Al. Chal. 6x22, Smidth 5½x20, 6'6"x21; Hardinge 4½x16" 8x18"; 8x9'; 8x36; 8x48; 10x48.
HAMMERMILLS: Penn SXT-350 HP motor, 6XB 10'x4'7"; Stedman 24x30, 36x42; Cedar Rapids 50-50, 2033, 30x33, 30x42 double; Dixie 36x50.
AUTOCLAVES: J&C 6'6"x58" Quick Acting.
KILNS: 6'x50', 6'x120', 9'x100', 8x124'.
DRYERS: 6'x40, 6x60, 6x72.
BALL MILLS: 4½'x16", 8'x36", 8'x48"

CRUSHING—WASHING—CLASSIFIER

Pioneer 10"x16" Crush. Plant with Pioneer 305-W Washing-Screening Plant
Eagle log washers Model BMD 48"x30"; BMD 4322 7'x21' Twin, 36"x20' dbl. log washer, 36"x30' Pioneer Port. 10x24 jaw, 24x16 roll. Complete C-R Prim. Port 22x36, Diesel.
Diamond Wet-Con Port. Prim. 20x36" crusher.

CONCRETE PLANTS AND EQUIPMENT

Johnson 150 ton 3 compt. aggr. cement silo. 1500 bbls. Complete.
Johnson 400 yd 6 compt. aggr. large capacity.
Johnson automatic batch, 10,000 bbl. cement
Noble CA 354, 4 compt. large capacity. Complete
Noble CA 154, 150 tons 4 compts. aggregate cement silo 2000 yds.
Noble CA-104 100 4 compt. 900 CF cement silo
Noble 5000 bbl. cement storage, elevators, 350 bbls. per hr.
Butler 2000 bbl. cement silo, elevators, etc.
Cook Bros. Model BDSI bulk cement semi-trailers
Erie Strayer 120 tons aggr. bin, 800 bbls. cement
Erie Strayer, new 1955, 40 yds per hour.
Blaw-Knox BCPC 600 bbl. cement silo
Blaw-Knox BCPC 300 bbl. cement bin
Smith 84-S 2 yd Tilt. Mixer 40 HP AC motor

SUCTION DREDGES FOR SAND-GRAVEL

Morris 6" Diesel on 14'x36' hull
Ellicott 14" x 12" Steel Hull 64' x 32' Diesel.
10" Portable Diesel powered. Complete.
Ameco 12" suc. 10" Dis. Hull 24'x56' Diesel-Elec.
Ellicott 8" with cutter. Diesel Hull 48'x18'x3'6"
8" Hydraulic Diesel. On 32'x8' steel pontoons
6" portable Diesel complete with cutters, etc.

SCREENS

Tyler-Hummer 4'x10' 2 Deck
New Symons 3'x12' 5 HP Elec. Motor.
Pioneer 5'x12' 3 deck spring suspension
Cedar Rapids 4'x12' dbl. deck 25 H.P. elec. motor
Pioneer 5'x12' 2 deck 20 HP elec. motor
C-R 4'x14' 2 deck 25 HP motor

RICHARD P. WALSH CO.

30 Church St. — New York 7, N. Y.
CO 7-0723 — Cable: RICHWALSH

PORTABLE ROCK CRUSHING PLANT

Near St. Louis

LIMA 604 - BACKHOE ATTACHMENT

FOR SALE

Primary Plant 2x10; apron feeder 36x40; Dixie Hammermill; UD-24 International Diesel Engine; 24" conveyor, 24' long for discharge to secondary machine.

Secondary Machine equipped with a 42x20 Gruendler Hammermill; 4x10 double deck Seco screen; D-13000 Caterpillar Diesel Engine; end conveyor 28" wide x 22' long; return conveyor 20" wide x 16' long. This is a closed circuit machine.

These 2 Units are all mounted on exceptionally good rubber and can be transported very easily. This plant is ready to pull into your pit and start crushing.

For Quick Sale, We Are Willing To Sacrifice Both Plants For $22,000.00.

Backhoe Attachment for Lima 604 Crane, Perfect Condition, Never Used $6,000.00

LAKE COUNTY EQUIPMENT CORP.

1800 Skokie Highway
HIGHLAND PARK, ILLINOIS
Call IDlewood 2-7150, Mr. Allen

DELAY IS CANCER'S FRIEND

Cancer needs time to develop The more time you give it, the less curable it becomes. Of the 255,000 Americans struck down by cancer last year, 75,000 died *needlessly*—enough to populate an entire city the size of Racine, Wisconsin or Santa Monica, California. These patients could have been saved if they had sought diagnosis and treatment in time.

Cancer research can be delayed too . . . by insufficient funds. The sooner you give . . . the more generously you give . . . the greater will be the attack against the nation's number two killer among diseases.

Be cancer's enemy . . . act *now.*

GUARD YOUR FAMILY—FIGHT CANCER WITH A CHECKUP AND A CHECK

Send your check to "Cancer," c/o your local postoffice.

AMERICAN CANCER SOCIETY

LIQUIDATION

ALPHA PORTLAND CEMENT CO.
MANHEIM, W. VA.

6—Vulcan 6'6"x60'x½" Rotary Kilns
1—Mosser 4'x47'x⅝" Rotary Dryer
1—Traylor 8'x11' Steel Lined Ball Mill
2—Beth. Fdy. 7'x24' Compeb Mills
2—Allis-Chalmers 6K; 8K Gyratorys
1—Barber Greene Model 82A Loader

STOCK ITEMS

Traylor 11'x155'x⅞" Rotary Kiln
3'x6' Horiz., 4'x9'x12" Vert. Puggers
Komarek-Greaves 27"x24" Briquet Presses
6'x25'; 6'x50' Louisville Rotary Dryers
7'x50'; 8'8"x70' Ruggles-Coles Dryers
Dixie #5060 Mogul Hammermill
15"x8" to 24"x18" Jeffrey Hammermills
2—Raymond 5 Roll Low Side Mills
Raymond 3 Roll #3036 Hi-Side Mill
Raymond #50, #40 Impact Mills
Jaw Crushers 48"x60", 36"x48", 20"x6"
6—Tyler Hummer Screens 4'x8', 4'x6'
4—Robinson Saw Tooth Crushers
535'—24" Troughing Belt Conveyor
Bucket Elevators 45' to 90' Centers

BOILERS, COMPRESSORS, GENERATORS

WRITE—WIRE—PHONE

HEAT & POWER CO. INC.
ROCK PROD. EQPT. DIV.
60 E. 42 St. New York 17, N.Y.
MU 7-5280

"OUR 52nd YEAR"

600' - 9" Screw Conveyor Complete Ends, Hangers & Gearmotors.
6—Centrif. Discharge Encl. Elevators 6" Buckets, H-78 Chain.
24" x 95' Truss Frame Conveyor with Walkway, All New.
14" & 16" Used Rex Idlers.
20" Roller Bearing Trough Idlers.
30" to 48" Used Robins Idlers.
20" x 76" Roball Screen, Double Deck.
Niagara 4' x 14' Single Deck Screen.
Niagara 2½' x 12' Single Deck Screen.
New Universal Screens In Stock.
Jeffrey Traylor #4 Vibrating Feeder with controller.
New Holland Plate Feeder 24" x 60"
Iowa 25 Yd. Portable Crushing Plant.
Acme Jaw Crusher 14 x 26" Steel Frame.
Farrel Lab. Jaw Crusher 6" x 2".
New England Jaw Crusher 14" x 28".
Sturtevant #1 Rotary Crusher.
2—Lancaster "Iroquois" Pug Mills.
6' x 32' Heatherington Dryer, 50 H.P.
Bucket Elevators All Sizes Built To Order.
Belt Conveyors All Sizes Built To Order.
Largest Stock Reducers on East Coast.
Motors Up To 50 H.P.

G. A. UNVERZAGT & SONS INC.
136 Coit St. Irvington 11, N.J.
Essex 3-8105

BRILL BUYS

1—Williams "Titan" 5 roll High Side Mill, 100 HP TEFC motor, 8' dia. Separator, complete with piping, fan, cyclone, Pangborn dust collector & many spare parts.

MILLS—CRUSHERS—PULVERIZERS
1—Traylor Compeb Mill, 7' x 27'.
2—Hardinge 10' x 48", 8' x 36" Conical Ball Mills, motor driven.
1—Denver 3' x 5' Continuous Ball Mill.
1—Telsmith Red. Crusher no. 46, 50 HP.
2—Kennedy #6 Gyratory Crushers, 50 HP.
5—Jaw Crushers 12" x 18" to 36" x 48".
1—Penn. Non-Clog Swing Hammermill, size 5060, Hopper opening 47" x 60", cap. 200-275 tons per hour. UNUSED.
1—Penn. Super-Thor Hammermill, size SXT-13, 250 HP.

AIR SEPARATORS—SCREENS
1—18' dia. Raymond Double Whizzer Separator with 100 HP motor.
1—14' dia. Raymond Double Whizzer Separator with 60 HP motor.
1—10' dia. Raymond Single Whizzer Separator.
1—Link Belt 6' x 14' double deck Vibrating Screen.
1—Tyler Hummer Screen 4' x 10'.

CONVEYORS
1—Fuller-Kinyon Conveying System, type H257, 100 HP.
2—Fuller-Kinyon Conveying Systems, type 10-B-No. R, 75 HP.

WIRE PHONE WRITE

Your Inquiries Solicited—Send for Circulars

BRILL EQUIPMENT COMPANY
35-57 Jabez Street, Newark 5, N. J.
Tel: Market 3-7420

LIQUIDATION

CEMENT PLANT, AKRON, N. Y.
Priced For Quick Sale

2—Allis Chalmers 8' x 100' Rotary Kilns.
1—Raymond 36" Bowl Mill, 50 HP.
1—Vulcan 6' x 50' Dryer, 25 HP.
1—Clyde #3 Hydrator with motor.
1—Raymond 16' Double Whizzer Separator, 75 HP.
14—Bucket Elevators, chain mounted, steel casing, 25' to 56' c.c.
1200'—9" and 14" Screw Conveyor.
15—Bins from 6' x 7'6" x 12', to 17' x 20' x 12'.
1—Steel Building, 60' x 80' x 40' high.

Call John Marshall at Akron.
Tel: LH2-5421

Your Inquiries Solicited—Send for Circulars

BRILL EQUIPMENT COMPANY
35-57 Jabez Street, Newark 5, N. J.
Tel: Market 3-7420

ELEC. AIR COMPRESSORS
6—Inger Rand, 1350, 2200 & 3800'
DIESEL ELEC. LOCOMOTIVES & CRANES
4—65 ton Whitcomb 2—25 ton & 2—20 Ton
2—45 ton & 1—80 ton & 4—100 ton Gen. Elec.
25 ton Amer. Diesel Loco Crane
ROTARY DRYERS & KILNS
5' x 25', 6' x 72', 8' x 60', 9' x 160', 10' x 78', 5' x 35' Ruggles-Coles XA-8 Dbl. Shell.
36" x 30' Ruggles Coles Rotary Kiln
REDUCTION MILLS & FEEDERS
5' x 10', 6' x 12" & 7' x 15' Rod Mills
2—KVS 5' x 8' Ball Tube Mills Air Swept
4' 0" Traylor Type TY-Gyratory
4¼' Symons Cone Crusher
32" x 40" Cedar Rapids Jaw Crusher w/Feeder
30" x 36", 36 x 42 & 56" x 72" Jaw Crushers
25B Telsmith Primary Breaker
2—20" Allis-Chalmers S.McC. Gyratory Crs.
15" x 24" & 20" x 36" Pioneer Jaw Crushers
2A Cedar Rapids Port. 24 x 16 Roll Crusher
14x28, 15x24 & 10x36 Cedar Rapids Jaw
48" x 72" Buchanan C Jaw Crusher
Bradley Hercules Mills (3) Type 6000
F55 Syntron Grizzley Feeder
36" x 96" H.R. Vibrating Pan Feeder New
24" x 95' H.R. Truss Conveyor New
3—200 HP & 160 HPSD. Ottumwa Elec. Hoists.
ELEC. WHIRLEY CRANES
2 Amer. R20-60 Gantry 139' Boom

WANT KILNS—DRYERS—CRUSHERS

R. C. STANHOPE, INC.
60 E. 42nd St., N.Y. 17, N.Y.
TEL. MU 2-3878 & 2-1898

BEST SELECTIONS

ROTARY KILNS—DRYERS—COOLERS

1—Traylor 11'x155' Rotary Kiln, ⅞" shell.
1—Allis Ch. 9'x130' Rotary Kiln, ¾" shell.
2—Allis Ch. 7'6" x 7' x 125' Rotary Kilns.
1—Traylor 8' x 80', ⅝" shell.
1—Vulcan 8' x 80', ½" shell.
1—Vulcan 7' x 80', ½" shell.
2—Link Belt Roto Louvre Dryers, 6'4"x24'.
1—Rennenberg 6' x 50', ⅜" shell.
1—Ruggles Cole 5' x 30', ⅜" shell.
1—Allis Chalmers 4' x 40'.
1—Allis Chalmers 4' x 30', ⅜" shell.
1—34" x 30', $\frac{7}{16}$" shell.

WIRE PHONE WRITE

Your Inquiries Solicited—Send for Circulars

BRILL EQUIPMENT COMPANY
35-57 Jabez Street, Newark 5, N. J.
Tel: Market 3-7420

FOR SALE

BUDA Engines — Unused Surplus — New Condition Complete from Radiator through Twin Disc Clutch and Drive Pulley. Four Cylinder, 874 Cubic Inch Displacement, 121 HP Gasoline Operated, Convertible to LP or Natural Gas.

Ideal for Rock Crusher—Pump—Saw Mill, etc. Fraction of factory cost. Particulars on Request.

Oldfield Equipment Co.
430 W. Seymour Ave.
Cincinnati 16, Ohio
Phone: VAlley 1-5582

NEW CRUSHER SHELLS

Pioneer 30x18 Roll Crusher

(Fine Corrugated #L-1399)

Save $350.00—Sale Price $200.00

Aggregate Equip. & Sply Co.
811 Lehmann Bldg. Peoria, Ill.

DESIRABLE EQUIPMENT AT REALISTIC PRICES

Crushers and Hammer Mills
Muller Type Mixers-Mills
Rotary Dryers and Kilns
Sifters, Screens, Separators
Filter Presses and Filters
Ball and Pebble Mills
Raymond Imp Mills, All Sizes
Presses and Pellet Machines

Send for "First Facts"

FIRST MACHINERY CORP.
209 - 10th St., Brooklyn 15, N. Y.
ST 8-4672 Cable "Effemcy"

WHERE TO BUY

continued . . .

JAW CRUSHERS

60"x48" to 6"x3"

New and used RELIABLE

"Farrel-Bacon" Jaw Crushers

BACON-PIETSCH CO., INC.

26 Park St., Montclair, N.J.

29 Washington Ave., Hamden, Conn.

Phone Montclair—Pi 6-1300

SPECIALS: Heavy media Wemco #2M **MILL**, drum separator, classifier, screen, magnetic separator complete. Also Jonestone Mill w/densifier, log washer, cone, compressor, screen etc.
PLANTS: CR Commander 1036, 1524, 1824, 2236 Univ. 880 Port. Noble CA354, CA506 Batch. Cummer 3000# & 4000#, BG842 Asphalt
CRUSHERS: 816, 1030, 1536, 1836, 2036, 2436, 3246, 3642, 4240, 4860 **JAW.** 9K, 12K Gates. AC322R, 636, 848R. 25½ & 37½ Kennedy. 28". 25B Telsmith **GYR.** 3' Symons. 1836, 1842 Sgl. 3018, 4024, 5424 Dbl **ROLL.**
DRYERS: 2x12, 3x15, 4x20, 4x30, 5x24, 8x70.
COMPRESSORS: 600 & 900 CFM Portable.
FEEDERS: 3x8, 3x10, 3x14 Apron. **LOADERS.** 30" McLanahan, 36"x20' Eagle dbl **LOG WASHERS.**
MILLS: Raymond 5047 Roll. Dixie 3636, 3650, Williams #30, #40 Hammer.
CONVEYORS: 18x20', 18x178', 24x115', 36x256'
SHOVELS: Marion 93M, 111M, NW6, 25, 80D. Link Belt L850, L890, B5. Lima 34, 604, 1201. P&H 655B, 1055. Koehring 605, 1005.

MID-CONTINENT EQUIPMENT CO. INC.

8321 Gannon St. Louis 32, Mo. Wydown 1-2828

LIQUIDATION BRIQUETTING PLANTS

2—Ruggles-Coles dryers, 104" x 70' x ⅝" shell.
2—Komarek-Greaves, briquetting presses, 75 HP, 25 tons per hour.
4—Komarek-Greaves vertical Fluxers (paddle mixers), 150 HP.
4—K-G Horiz. Fluxers, 50 HP.
4—K-G Pug Mills, 30" dia. x 14'4".
6—Tyler Screens, 4' x 8', 4' x 6'.
2—42" wide traveling-screen cooling conveyors, total of 950'.
6—Robinson Sawtooth Crushers.
2—Pa. Crusher #C-3-30 hammermills,
20—Welded Steel bins, cone bottom, from 15,000 gal. to 90,000 gal.
8—16", & 24" trough-belt conveyors, 100', 250', 500' long.
6—36" & 48" apron feeders, 8' long.
8—Bucket elevators, 62' and 90' c-c.

PERRY EQUIPMENT CORP.
1418 N. Sixth Street
PHILADELPHIA 22, PA.
Phone: POplar 3-3505

HEAT & POWER CO., INC.
60 E. 42nd Street
NEW YORK 17, N. Y.
Phone: MUrray Hill 7-5280

FOR SALE

Sherman Pipe Machine and Equipment for 4" to 36".

3' and 4' molds and accessories for 12" to 36".

Machine can be seen in operation.

Installing new 8' machine.

Call or write for details.

SIKES CONCRETE PIPE COMPANY
Panama City, Florida
Phone PO 3-2811
P.O. Drawer 1400

SELLING OUT:
Small Construction Business
One Ready-Mix Plant
One Diamond Portable crusher Model No. 66—10 x 36 jaw with rolls D 13000 power unit.
Shovels, bulldozers and other equipment.
PETER L. RELICH CONSTRUCTION CO.
406 W. Longyear St., Bessemer, Mich., Phone 2621

RETARDED CHILDREN

CAN BE HELPED

SUPPORT YOUR LOCAL ASSOCIATION FOR RETARDED CHILDREN

RP BUYER RESEARCH SERVICE

PRODUCER PURCHASING SERVICE *FREE*

QUICK—COMPLETE SOURCE CONTACTS FOR ROCK PRODUCTS PRODUCERS on Machinery—Equipment—Supplies—Service

___Aftercoolers, Air
___Agitators
___Aggregates (special)
___Air Compressors
___Asphalt Mixing Plants
___Bagging Machines
___Bags
___Barges
___Belting, Conveyor Elevator, Power Transmission
___Belting, V-type
___Belt Repair Equipment
___Bin Level Indicators
___Bins and Batching Equipment
___Bits
___Blasting Supplies
___Bodies, Trailer
___Buckets
___Bulldozers
___Cars, Industrial
___Classifiers
___Clutches
___Coal Pulverizing Equipment
___Concentrating Tables
___Conveyors
___Crushers
___Coolers
___Cranes
___Derricks
___Dewatering Equipment, Sand
___Diesel Engines
___Dragline Cableway Excavators
___Draglines
___Dredge Pumps
___Drilling Accessories
___Drills
___Dryers
___Dump Bodies
___Dust Collecting Equipment & Supplies
___Electric Motors
___Engineering Service Consulting and Designing
___Explosives & Dynamite
___Fans and Blowers
___Feeders
___Fifth Wheel Heavy Duty Special
___Flotation Equipment
___Front End Loaders
___Gasoline Engines
___Gear Reducers
___Generator Sets
___Grinding Media
___Gypsum Plant Machinery
___Hard Surfacing Materials
___Hoists
___Hoppers
___Kilns: Rotary, Shaft, Vertical
___Locomotives
___Lubricants
___Magnetic Separators
___Mills
___Pipe
___Pumps
___Scales
___Screen Cloth
___Screens
___Scrubbers: Crushed Stone, Gravel
___Shovels, Power
___Speed Reducers
___Tanks, Storage
___Tires and Tubes
___Torque Convertors
___Tractor Shovels
___Tractors
___Trailer Dump Bodies
___Trucks, Bulk Cement
___Trucks, Industrial
___Trucks, Mixer Body
___Trucks, Motor
___Valves
___Vibrators
___Welding and Cutting Equipment
___Winches
___Wire Cloth
___Wire Rope

If equipment you are in market for is not listed above, write it in space below.

The principal rock product(s) manufactured by my company is/are indicated "1", "2", "3", in order of importance below.
___Crushed Stone
___Sand & Gravel
___Slag
___Cement
___Lime
___Gypsum
___Ready Mix Concrete
___Concrete Products Type_____
Other nonmetallic mineral (What?)_____
All above information is strictly confidential to be used to guide the manufacturers in supplying proper information.

Please Check Service Desired
☐ Have Salesman Call ☐ Literature only
☐ Prices ☐ By mail ☐ Urgent

NOTE: See—Where to Buy-Classified Advertising Section for used equipment and complete plant information

Name _____
Title _____
Firm _____
Street & No. _____
City and State _____
Your Signature _____ Title_____

FILL IN—TEAR OUT—MAIL NOW! *BUYER RESEARCH SERVICE DEPARTMENT:* ROCK PRODUCTS 79 W. Monroe St. Chicago 3, Illinois

BEST BELT BUYS

Heavy duty, 2500-3000# cover tensile, 16-19# friction pull. Brand new.

4 ply 28 oz.		List	Sell
14"	1/8"x1/4"	$4.48	$2.60
16"	1/8"x1/4"	$5.06	$2.93
18"	1/8"x1/4"	$5.61	$3.26
18"	1/8"x1/4"	$5.92	$3.44
20"	1/8"x1/4"	$6.14	$3.56
24"	1/8"x1/4"	$7.22	$4.18
24" (5 ply)	1/8"x1/4"	$8.78	$5.09
30" (5 ply)	1/8"x1/4"	$11.30	$6.50

Many other sizes. Samples on request. Distributor inquiries invited.

PALTECH CO.
New Canaan, Conn. WO 6-4126

FOR SALE

Three-year old feeder-crusher unit complete — motors, drives, controls, chutes, grizzley, platform, etc. May be seen in operation until June—Available in July. Cedarapids Equipment. Jaw crusher 32" x 40 "—Serial No. 18238. Feeder 42" x 14'. Serial No. 18238. Priced at $20,000 loaded.

PALMETTO QUARRIES COMPANY
P.O. BOX 5185 Columbia, S. C.
Tel. AL-66391

3—10'x78' Dryers—2'3'4'5½' Symons and Telsmith Cone Crushers—3648-4042-4872 Jaw Crushers and smaller sizes—Jeffrey 2448 DTF Vibrating Feeders—other types of Feeders—Eagle Fine & Coarse Material Washers—Dixie Non Clog moving plate Hammermills—Asphalt Plants—Jaw—Cone—Gyratory—Roll Double and Triple—Hammermill and Impact Crushers—Ball—Rod—Tube Mills—Screening, Washing and Crushing Plants, Classifiers Compressors, Conveyors, Cranes, Drills, Dump Cars, Dredges, Feeders, Hoists, Motors, Generators, Kilns, Dryers, Locomotives, Pumps, Screens, Shovels, Draglines, Transformers, Euclid Trucks.

STANLEY B. TROYER EQUIPMENT CO.
Box 97 Phone 500 Crosby, Minnesota

FOR SALE

15 x 36 Pioneer Jaw Crusher
40 x 22 Austin-Western Roll Crusher
4 x 8 Pioneer Double Deck Screen
4—30 ton Steel Bins, nested
Above available with motors and drive

POWER EQUIPMENT COMPANY
Box 2311, Knoxville, Tenn.

LIFE SAVING · SENIOR ·

Red Cross safety training helps to save lives

Good things happen when you give

FOR SALE

1959 Bay City 60 Dragline, 1,200 hours, Pioneer 38-V Gravel Plant, plant is running,

1953 ¾ yd. Insley Dragline, A-1 shape, Tool Shed
Portable Welder

5" water pump with 4 cylinder continental motor, A-1 shape,

All equipment in A-1 shape and can be seen at

GENESEE GRAVEL COMPANY
River Road, Flint, Michigan, CEdar 8-0685
OWNER LEAVING STATE

FOR SALE OR RENT

2½ Yd. Link-Belt Crane-Dragline. K-595. 140' Boom & Jib.
Caterpillar D-17000 Engine.
1 Yd. Lorain L-50. 60' Bm. GM Diesel. New 1951.
40/50 Ton American Diesel Loco. Crane.
25 Ton Brownhoist Diesel Loco. Crane.
45 Ton Gen. Elec. Diesel Elec. Locos.
25 Ton Gen. Elec. Diesel Elec. Loco.
75 Ton Whitcomb Diesel Elec. Loco.
500 HP Cat. New 1951.

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

SALE OR RENT

25 & 45 Ton G. E. Diesel Electric Locomotives
65 Ton Porter Diesel Electric Locomotive
30 & 40 Ton Diesel Locomotive Cranes

B. M. WEISS COMPANY
Girard Trust Bldg. Philadelphia 2, Pa.

RAILS AND CARS

ALL ACCESSORIES,
ALL CLASSES OF USED MACHINERY

M. K. FRANK
Grand Central Palace, New York, N.Y.
401 Park Bldg., Pittsburgh, Pa.

FOR SALE

As is, where is, subject to prior sale 1—3500 Manitowoc and 1—P&H 955A complete shovel fronts with 2½ Cu. Yd. bucket.

J. L. Shiely Company
1101 N. Snelling Ave., St. Paul 13, Minnesota
Telephone—Midway 6-8601

1—10' x 48" Hardinge mill.
2—8' x 36" Hardinge mills.
2—16' Gayco air separators.
Kilns—dryers—lime hydrators.

W. P. HEINEKEN INC.
Mfgrs. & Engineers. 50 Broad St. N.Y.

EQUIPMENT WANTED

WANTED

4 Compartment bin and batcher for Ready-Mix Concrete Plant.

Williams Construction Company
Box 5045 Baltimore 20, Md.
Telephone: MUrdock 6-1000

WANT TO BUY

Rotary Kilns, Dryers & Coolers
Ball, Rod & Tube Mills
Roll, Cone, Jaw & Gyratory Crushers
Compressors, Locomotives, Derricks & Cranes

THE DARIEN CORP.
60 E. 42nd St., N.Y. 17, N.Y.

WANTED

Ladder Type Digging and Processing Barge.

Maysville Sand & Gravel Co.
P.O. Box 274 Maysville, Ky.
Phone LOgan 4-3344

CONSULTING ENGINEERS AND SERVICES

CORE DRILLING
--anywhere!
"We look into the earth"
PENNSYLVANIA DRILLING COMPANY
Pittsburgh 20, Pa.

Core Drilling
Minerals Clays Limestone
Foundation Testing
Buildings Highways
THOMASVILLE DRILLING & TESTING CO., INC.
Thomasville, Pennsylvania.

EDMUND BURWELL ILYUS
Consulting Engineers
Automation—Materials Handling
Plant & Process Design
P.O. Box 1253 Roanoke, Va.

JOHN R. RAND INCORPORATED
Geologic Consulting
Mineral exploration—geophysical surveys—reserves evaluation—groundwater studies—soils—engineering geology—earth materials—aggregates.
67 State Street Augusta, Maine

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. LEE HEIDENREICH JR.
CONSULTING ENGINEERS
75 Second Street
Newburgh, N.Y.
Phone JO 1-1828 (Code 914)

Operation
Plant Layout
Design
Appraisals
Construction

WHERE TO BUY

continued . . .

BUSINESS OPPORTUNITIES

READY MIX CONCRETE PLANT FOR SALE

$500,000.00 ANNUAL GROSS AND STILL GROWING

LOCATED IN LAKE COUNTY, INDIANA

OWNER SEEKS RETIREMENT

WRITE FOR AN APPOINTMENT

Box R-58 c/o
Rock Products, 79 W. Monroe
Chicago 3, Illinois

Large High Grade
LIMESTONE QUARRY DEPOSIT
South Western Virginia
On mainline N & W Railroad
FOR SALE OR LEASE
Contact
LAKESIDE CONSTRUCTION CO., INC.
312 17th Street
DENVER 2, COLORADO

WANTED HELP — POSITIONS

POSITION WANTED

Quarry Production Superintendent 24 years experience Crushed Stone Production. Efficient operation assured. Write Box-S17, Rock Products, 79 W. Monroe, Chicago 3, Illinois

WANTED

Electrical Foreman for a cement plant. Ability to supervise, plan and maintain equipment. Furnish reference, experience and salary expected. Box S-18, Rock Products, 79 W. Monroe, Chicago 3, Illinois

Try A Small Ad

For Quick Results

INDEX TO WHERE TO BUY

Aggregate Equipment & Supply Co. 187

Bacon-Pietsch Co., Inc. 188
Bonded Scale & Machine Co. 185
Brill Equipment Co. 187

Corson, G. & W. H., Inc. 184

Darien Corp. 189
Dugan Oil Transport Co., Dan 184

Eighmy Equipment Co. 185

First Machinery Corp. 187
Fogleman, Julius M. 185
Frank, M. K. 189
Fry Coal & Stone Co. 185

Genesee Gravel Company 189

Heat & Power Co., Inc. 187
Heidenreich, Jr., E. Lee 189
Heineken, W. P., Inc. 189

Ilyus, Edmund Burwell 189

Lake County Equipment Co. 186
Lakeside Construction Co., Inc. 190
Lubrecht, William III 184

Machinery Center Inc. 184
Maysville Sand & Gravel Co. 189
Mid-Continent Equipment Co., Inc. 188

Nussbaum Electric Co. 186

Oldfield Equipment Co. 187
O'Neill, A. J. 185

Palmetto Quarries Co. 189
Paltech Co. 189
Pennsylvania Drilling Co. 189
Perry Equipment Corp. 186, 188
Power Equipment Company 189

Rand, John R., Inc. 189
Relich, P. L., Construction Co. 188

Shiely, J. L., Co. 189
Sikes Concrete Pipe Co. 188
Smith, L. B., Inc. 184
Stanhope, R. C., Inc. 187
Swabb, Frank, Equipment Co., Inc. 185

Thomasville Drilling & Testing Co., Inc. ..189
Tractor & Equipment Co. 185
Troyer, Stanley B., Equipment Co. 189

Unverzagt, G. A. & Sons Inc. 187

Walsh, Richard P. Co. 186
Weiss, B. M. Co. 189
Whisler Equipment Co. 189
Williams Construction Co. 189

How to place your classified ad!

To place classified advertising in succeeding issues of ROCK PRODUCTS, simply complete coupon, attach copy, and mail to:

ROCK PRODUCTS, "Where to Buy" Department
79 West Monroe St., Chicago 3, Illinois

Company _____

Street _____

City _____ Zone____ State_____

Your Name _____

Check One: ☐ Remittance enclosed ☐ Please invoice me

Specify date of insertion:*

☐ January	☐ May	☐ September
☐ February	☐ June	☐ October
☐ March	☐ July	☐ November
☐ April	☐ August	☐ December

**Closing Date: 12th of month preceding date of publication*

Specify size:	Rate per insertion†
☐ 1 inch	$10.25 per inch
☐ 2-9 inches	$10.00 per inch
☐ 10-19 inches	$ 9.75 per inch
☐ 20-30 inches	$ 9.50 per inch

†*Write for rate card for lower rates on a contract basis*

Box numbers—which will be assigned to ads at no extra charge, if so desired—are confidential, and advertisers' names will not be disclosed. All reader replies will be forwarded to advertisers daily.

ORDER YOUR COPY OF THE J. A. Nicholson Book

READY MIXED CONCRETE TODAY

Only $5.00 a copy

James A. Nicholson, for many years the President of the Nicholson Concrete Company of Toledo, Ohio, was named President of The Toledo Plaster & Supply Company, Toledo's oldest building material firm in August, 1959.

Jim (as he is known in the industry) Nicholson is a graduate lawyer and first entered the concrete business in 1936 after serving six years as head football coach of the University of Toledo. Starting from scratch, after taking over a defunct building supply company, he set out to develop a ready-mixed concrete business without previous knowledge. Today he is recognized as one of the best informed men in the industry.

He is a past president of the Ohio Ready Mixed Concrete Association and former director of the National Ready Mixed Concrete Association. Mr. Nicholson has also spoken on a number of industry problems at different concrete quality schools held throughout the country.

Nicholson Concrete Company was incorporated in 1950, the business having been operated and built up previously as an individual enterprise. Four central mixing plants serve the Toledo area, and the delivery fleet consists of approximately 45 mixer trucks. The company employs 75 men and the volume of sales in ready-mixed concrete is currently at the rate of $2,000,000 annually.

ROCK PRODUCTS
79 West Monroe Street
Chicago 3, Illinois
Maclean-Hunter Publishing Corporation

THERE ARE apparently but two ways to learn the intricacies of any business or profession. One is in the hard school of individual personal experience, which is often costly and unnecessarily discouraging. The other is a thorough understanding and intelligent use of the experience of others. When a qualified author, such as Mr. Nicholson, discusses his experience, including failures and mistakes, in an analytical and philosophical mood, the reader can profit from the recorded knowledge of another. Having once absorbed the breadth and completeness of the contents of this book, the reader should be well protected against errors of judgment that have proved so costly to many a new enterpriser. READY MIXED CONCRETE is a compilation of a series of articles on the ready-mixed concrete industry that have been published serially in CONCRETE PRODUCTS during the last several years. Now being offered for the first time in book form it is a veritable encyclopedia on ready-mixed concrete.

WE RECOMMEND Ready Mixed Concrete to all manufacturers, executives and salesmen who are interested in the production and marketing of building supply products.

The book sells for $5.00 per copy.

Each of the ten sections listed below consist of from three to eleven chapters in which the various subjects are comprehensively treated.

- Operation Fundamentals
- Special Operation Consideration
- The Story of the Ready-Mixed Concrete Industry
- Quality Problems and Importance of Good Practices
- Dealing with Customers
- Delivery Control Problems
- Handling Labor Problems
- Merchandising Ready-Mixed Concrete
- Preventive Maintenance in the Ready-Mixed Concrete Industry
- Business Office Operations

PLEASE ENCLOSE REMITTANCE WITH ORDER

RP-6

ROCK PRODUCTS
79 West Monroe Street, Chicago 3, Illinois

Please send _____ copies of READY MIXED CONCRETE for which I enclose $_____ ($5.00 per copy).

NAME _____

STREET _____

CITY _____ STATE _____ ZONE ____

INDEX TO DISPLAY ADVERTISERS

Allis-Chalmers 41, 64, 65, 107, 109
American Clay Machinery Div.
Huber-Warco Co. 171
American-Marietta Co.
Marietta Concrete Div. 180
Armco Drainage & Metal Products 151
Armstrong-Bray & Co. 176
Atlas Powder Co. 52, 53

Baltimore & Ohio Railroad 150
Barber-Greene Co. 134, 135
Bemis Bro. Bag Co. 183
Bradley Pulverizer Co. 147
Bucyrus-Erie Co. 145, 163
Buell Engineering Co., Inc.
Northern Blower Div. 50

Canadian Refractories Ltd. 117
Carrier Conveyor Corp., Div.
Chain Belt Co. 40
Caterpillar Tractor
Co. 33, 34, 35, 36, 57, 62
Chain Belt Co. 40, 71, 73, 75, 77
Clark Equipment Company
Construction Machinery
Div. 120, 121, 122, 123
Combustion Engineering, Inc.
Raymond Div. 143
Corhart Refractories Co.
Subsidiary of Corning Glass
Works 103

Darin & Armstrong, Inc. 153
Deister Concentrator Co., Inc. 180
Deister Machine Co. 155
Detroit Diesel Engine Div.
General Motors Corp. 137
Diamond Iron Works Div.
Goodman Mfg. Co. 4
Drilling Accessory & Mfg. Co.,
Inc. 181
DuPont, E. I., de Nemours & Co.,
Inc. 169

Eagle Iron Works 55
Eaton Mfg. Co.
Fuller Mfg. Co. Subsidiary 146
Electric Steel Foundry Co. 18, 19
Ensign-Bickford Co. 158
Euclid Div.
General Motors Corp. 83

Fairbanks, Morse & Co. 167
Falk Corp. 21
Firestone Tire & Rubber Co. 125
Fiske Brothers Refining Co.,
LUBRIPLATE DIVISION 165
Flexible Steel Lacing Co. 59
Flygt Corporation 56
Foote Bros. Gear & Machine
Corp. 141
Frog, Switch & Mfg. Co. 165
Fuller Company
Traylor Eng. & Mfg., Div. 7
Fuller Mfg. Co.
Subsidiary Eaton Mfg. Co. 146

Gardner-Denver Co. 133
Gelb, R., & Sons Inc. 162
General Motors Corp.
Detroit Diesel Engine Div. 137
Euclid Div. 83
Goodman Mfg. Co.
Diamond Iron Works Div. 4
Goodrich, B. F., Co. 1, 131
Goodyear Tire & Rubber Co. 8, 9

Hannon & Sons, F. R. 177
Hardinge Co., Inc. 76
Harvey Drilling Co. 140
Hayward Company 162
Hough, Frank G., Co. 10, 11
Huber-Warco Company
American Clay Machinery Div. .171

Illinois Gear & Machine Co. 81
Ingersoll-Rand Co. 31
International Harvester
Co. 46, 47, 48, 49
Iowa Mfg. Co. 38, 39

Jeffrey Mfg. Co. 129
Joy Manufacturing Co.
Western Precipitation
Div. .....Inside Front Cover

Kaiser Aluminum & Chemical
Sales, Inc. .....Back Cover
Kaiser Engineers
Div. Henry J. Kaiser Co. 27
Kansas City Hay Press Co. 182
Kennedy Van Saun Mfg. & Eng.
Corp. 105
Koehring Company
Koehring Division 60, 61
Stardrill-Keystone, Buffalo-
Springfield Co., Division 63

Link-Belt Co. 15
Link-Belt Speeder Corp. 22, 23
Lippmann Engineering Works,
Inc. 74
Lovejoy Flexible Coupling Co. ...142
LUBRIPLATE DIVISION
Fiske Brothers Refining Co. 165
Ludlow-Saylor Wire Cloth Co.
Star Wire Screen & Iron Works,
Inc., Subsidiary 138

McLanahan & Stone Corp. 154
Mack Trucks, Inc. 66, 67
Macwhyte Wire Rope Co. 17
Madsen Works, Construction
Equipment Division Baldwin-
Lima-Hamilton Corp. 164
Manhattan Rubber Div.
Raybestos-Manhattan Inc. ...28, 29
Marietta Concrete Div.
American-Marietta Co. 180
Marion Power Shovel Co., Div.
Universal Marion Corp. 179
Mine & Smelter Supply Co. 78, 79
Murphy Diesel Co. 72

Nordberg Mfg. Co. 58
Northern Blower Co.
Div. of Buell Engineering Co.,
Inc. 50
Northwest Engineering Co. 5

Oliver Corporation 111
Orton Crane & Shovel Co. 118
Overstrom & Sons, Inc. 82

Pettibone Mulliken Corp.
Universal Engineering Corp.,
Subsidiary 173
Porter, H. K., Co., Inc.
Thermoid Div. 149

Raybestos-Manhattan, Inc.
Manhattan Rubber Div. 28, 29
Raymond Div.
Combustion Engineering, Inc. ..143
Reo Div.
White Motor Co. 69, 70
Rockwell-Standard Corp.
Transmission & Axle Division-
Detroit 51

Sauerman Bros., Inc. 156
Schramm, Inc. 148
Screen Equipment Co., Inc. 42, 43
Sheffield Steel 161
Sly, W. W., Mfg. Co. 44
Smith Engineering Works 3
Smidth, F. L., & Co. 12
Star Wire Screen & Iron Works,
Inc. Subsidiary of Ludlow-
Saylor Wire Cloth Co. 138
Stardrill-Keystone, Buffalo-
Springfield Co., Div. of Koehring
Co. 63
Stephens-Adamson Mfg. Co.
Standard Products Div. 6
Syntron Company 175

Thermoid Div.
H. K. Porter Co., Inc. 149
Thew Shovel Co. 139
Torrington Co. 24
Traylor Engineering & Mfg. Div.
Fuller Co. 7
Twin City Iron & Wire Co. 176

Union Bag-Camp Paper
Corporation 113
Universal Engineering Corp.
Subsidiary of Pettibone Mulliken
Corp. 173
Universal Marion Corp.
Marion Power Shovel Co., Div. .179
Universal Road Machinery Co. ...156
Universal Vibrating Screen Co. ..165

Vulcan Iron Works 140

Western-Knapp Eng.
Co. .....Inside Back Cover
Western Machinery Co. 45
Western Precipitation Div.
Joy Mfg. Co. ...Inside Front Cover
Wilfley, A. R., & Sons, Inc. 177
Winslow Government Standard
Scale Works, Inc. 177
Whitmore Mfg. Co. 156
Williams Patent Crusher &
Pulverizer Co. 115

"Imagination... is the source of human improvement; experience its implement"

This new $5,000,000 aggregate processing plant and facilities of Consumers Division, Vulcan Materials Company near Chicago Illinois, has been described in a leading national business magazine as ". . . the biggest and most efficient in the U.S." Designed, Engineered and Constructed by WKE.

Appius Claudius, builder of the celebrated Appian way. Sub-grades of the famous Roman roadway, a marvel in basic engineering, were formed with aggregates and concrete—contained local materials wherever possible.

PROGRESS IN AGGREGATES BY VULCAN...NEW OUTLOOK FOR THE NATION'S CONSTRUCTION

The production of aggregates—crushed stone, slag, sand and gravel for construction, with a history as old as man's recorded engineering works—has a new look in the making.

Vulcan Materials Company, one of this billion-dollar industry's most forward-thinking producers, has launched a first in aggregates. They have broken precedent in a traditionally local industry by combining companies all over the country for national distribution of basic building materials.

Experience, skillful management—and a good measure of courage—have been keys to success in this new direction by Vulcan Materials Co. Progressive plant development, too, has been essential for profitable production.

The men of Vulcan have added to their own experience the skills and knowledge of the engineers and construction specialists of WKE for the design, engineering and construction of new, modern plant facilities like those for their Consumers Division in Chicago. The results: the industry's most advanced operating potential—plants, methods and equipment; a new multi-million-dollar capability—to compete in a broad, new market.

It is a matter of pride with the men of WKE to have had a part in the progress of Vulcan Materials Company. They would like to show you their work in a recently completed Consumers motion picture. Why not request a showing—and discuss *your* plant development or modernization plans with WKE—soon?

PROJECT DESIGN • ENGINEERING • CONSTRUCTION

WKE®

WESTERN-KNAPP ENGINEERING CO.
SAN FRANCISCO • New York • Chicago • Hibbing

Building for the Future—in a World of Industries

Enter 1269 on Reader Card

KAISER UNITAB KILN LINER

INDUSTRY'S FIRST UNITIZED KILN LINER AND STILL THE INDUSTRY'S BEST!

In 1955, Kaiser Unitab Kiln Liners introduced cement producers to the savings in installation time and the increased liner life made possible by factory-bonded shims and spacers.

Today, Unitab Liners are still setting records unmatched by any other kiln liner! Such as:

". . . installed 30 feet of Unitab Liners in 15 hours—as compared to 23 hours for (competitor) . . ."

". . . now have 584 days on Unitab Lining in No. 2 kiln—no hot spots."

Why this continued superiority?

First, the Unitab design assures fast installation . . . with correct placement of liner, shim and spacer all at one time. The cardboard spacer gives correct allowance for longitudinal expansion, and the shim bonding adhesive gives correct allowance for circumferential expansion. The portion of the shim overlapping the hot face melts during production start-up, quickly welds clinker particles into a tenacious coating. Gap between shim and shell acts as heat buffer.

Second, the Unitab brick assures long-life performance. This Kaiser Periclase Chrome brick is designed—and proved in kiln service—to be dimensionally stable, and to give high resistance to spalling and chemical attack by hot clinker.

If you aren't already using Kaiser Unitab Kiln Liners, let your Kaiser Refractories representative show you their time-saving, production-adding advantages. And ask to see the 30-minute color movie, "Progress in Modern Basic Refractories."

Call or write Kaiser Refractories & Coatings Division, Dept. C9541, Kaiser Aluminum & Chemical Sales, Inc., at any of the Division Offices listed below:

PITTSBURGH 22, PA. . . . 3 Gateway Center
MEXICO, MISSOURI . . . Max-R-Co Building
OAKLAND 12, CALIF. . . . 1924 Broadway

KAISER REFRACTORIES

*U. S. Patent No. 2828677. Foreign patents applied for.